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STEEL AND METAL DIGEST

EDITORS

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The STEEL AND METAL DIGEST in a new dress, wishes its readers, A Happy New Year.

Commencing with this issue the space on the front cover, formerly used to feature the contents, is offered to the trade for advertising purposes. We have adopted the policy of selling this front cover space to a different advertiser each month; no company to occupy it more than once during the year.

The DIGEST, now in the seventh year of its publication, has made steady progress year by year. Starting on a small scale the periodical has gradually been enlarged and we hope as time goes on, we will be able to add such new features as will steadily increase its value as an accurate summary of trade developments; and in its endeavor to separate the wheat from the chaff in its digest of the news for the month, will greatly assist its readers in forming a correct opinion of the future.

Yours respectfully,
The Publishers.

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The Business Situation and Prospects.

The past year has been a wonderful one in American trade, and is likely for years to come to remain a record for American activity, prosperity and high prices, and we hold this opinion even if the war is to be continued through 1917. The extreme high prices of 1916, caused by a demand at times in excess of the ability to meet same, will probably never be seen again by the present generation. This we think will be particularly true in the iron, steel and metal trades for even if the war is to continue, and the home and export demand this year is to be as large as in 1916, which is extremely unlikely, our facilities for the production of iron, steel and metals have been so largely increased, that it is safe to say that all probable demands will be met no matter how large. We do not expect a repetition of the fears of there not being enough supplies, and therefore none of the excitement that caused the sensational advances in prices last year.

The increase in American production in 1916 over 1915 was as follows:

Copper, 539,990,473 lbs. or	38.9%
Spelter, 168,481 tons, or	34.0%
Lead, 29,545 tons, or	5.4%
*Iron, 9,483,787 tons, or	31.7%

* Estimated.

It has been again demonstrated that the way to get increased supplies is to raise the price, and we think it will also be shown in the future that the way to get low prices is by just such an ex-

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perience of high prices as we are going through, and that it is going to be demonstrated not only in commodities but in the great problem of food. As an authority said this week: "Two or three years of high-priced food will do more to stimulate agriculture, than all the science and agricultural colleges in the world combined." Economic laws work unerringly. It is a maxim in the leather trade that high-priced hides make cheap shoes. The Secretan corner and later the Rogers artificial control of copper prices was followed by an increased production that gave us low prices and with these low prices the great development in electricity and greater use of the metal.

It seems to be consensus of opinion that our prosperity is to continue through 1917. This is dependent on so much that cannot possibly be known at present, that opinions on the subject are almost valueless. Remember the doubts, fears and predictions of two years ago, and it is astonishing to think that at that time so little of what has happened was foreseen by anyone. However, even granted that the wealth we have accumulated and the commanding position we have gained in the economic and the financial world is to result in continued prosperity, we claim we have already begun a return to normal conditions and prices, and the only question is whether our retreat is to be a slow and orderly one, or a radical change in operations, and a disorderly retreat in prices. The length of the war will be the deciding factor in this direction. If war is to continue through 1917 prices will be reduced very slowly, and trade will continue to be under considerable stimulation, but if it is to end this spring or summer we are facing a serious reaction.

In the security market we have lately had a salutary reminder that values are not entirely based on existing conditions, and earning power or accumulated profits. Sentiment plays an important part. Based on present earnings, prices are not high in Wall Street, and enormous surpluses have been accumulated in the industrials to pay present rates of dividends for a long while to

come, but as surely as present operations and rate of earnings are decreased so surely will values decline. Wall Street has again demonstrated its usefulness as a sensitive gauge to register a change in future prospects, and a warning to prepare for the future.

We hear a great deal about the sold up condition of our mills, and this is repeatedly quoted as a reason why under no conditions can there be a severe reaction in activity and prices. But we have seen in the past that full order books cannot hold a situation where sentiment is disturbed and confidence in prices is shaken. We have seen this lately in copper. A few weeks ago the producers were absolutely sold up to next May and it seemed impossible to find a seller for 500 tons of the metal for delivery in January. Since then on only a change in sentiment, prices have declined over 7c per pound and more metal has been offered for sale at the decline than there are buyers for.

There are no signs of this yet in iron and steel, and the best authorities in the trade are certain that no such condition will have to be faced, but this remains to be seen. An unexpected ending of the war, and the shock it will cause to sentiment and to a situation—built up on the extraordinary conditions that the war has created—is bound to be a severe one.

We hear a great deal of the demand for peace requirements and the taking care of Europe's depleted stocks, etc. But the shock and demoralization must first be undergone with its attendant results, even if these peace demands when they come, are to equal the most optimistic predictions, and in some measure lead to stability.

There are dangers in the situation and outlook that we do not mention, and perhaps the most serious one is the labor situation. It is sufficient at present to call attention to the danger of the high prices for commodities, and the readjustment that must sooner or later be faced. It is wise to take time by the forelock, and to prepare now for the inevitable, by a policy which need not be one of distrust of the future but rather of conservatism and caution.

Extreme Fluctuations and Average Prices for 1916 on Metals, Iron and Steel.

METALS.

F. O. B. NEW YORK.

	1916		1915.	1914.	1913.
	Opening.	Highest.	Lowest.	Average.	Average.
Lake Copper	23.25c	35.00c	23.00c	17.64c	15.70c
Electrolytic Copper	23.25	36.00	23.00	17.47	15.52
Casting Copper	22.25	34.00	22.00	16.76	15.33
Tin	42.00	56.00	37.50	38.66	44.32
Lead (open market)	5.52½	8.25	5.52½	4.66	4.42
Spelter	17.42½	21.17½	8.37½	14.44	5.80
Aluminum (No. 1 Virgin 98.99%)	55.00	67.00	53.00	34.13	18.59½
Antimony (Chinese and Japanese)	41.00	45.00	10.50	29.52	8.53½
Silver	557½	77¼	557½	65.66	54.81
F. O. B. ST. LOUIS.					
Lead (open market)	5.45	8.25	5.45	4.57	3.74
Spelter	17.25	21.17½	8.20	13.57	5.11½

PIG IRON.

Bessemer, Valley	\$21.00	\$35.00	\$20.00	\$23.05	\$14.90	\$13.99	\$16.26
Basic, Valley	18.00	30.00	17.75	19.87	13.78	12.80	14.77
No. 2 Foundry, Valley	18.50	30.00	18.25	20.16	13.81	13.02	14.87
No. 2 Foundry, Philadelphia	19.50	30.75	19.50	21.20	15.25	14.59	16.56
No. 2 Foundry, Cleveland	18.80	30.95	18.50	20.40	14.31	13.76	15.37
No. 2 Foundry, Buffalo	18.25	35.00	18.00	20.67	13.98	12.84	14.87
No. 2 Foundry, Chicago	19.00	30.00	18.00	20.67	14.46	14.15	16.39
No. 2 Foundry, Southern, Cincinnati ..	17.40	27.90	16.90	18.74	13.49	13.15	14.63

IRON AND STEEL PRODUCTS.

F. O. B. PITTSBURGH.

Bars	1.80c	3.00c	1.85c	2.48c	1.31c	1.15c	1.38c
Plates	1.80	3.60	1.85	2.82	1.29	1.14	1.41
Shapes	1.80	3.10	1.85	2.50	1.30	1.16	1.42
Wire (nails)	2.10	3.00	2.10	2.45	1.66	1.57	1.70
Sheets (28 ga.)	2.60	4.50	2.60	3.06	1.93	1.89	2.20
Tin Plates	3.75	7.50	3.75	5.34	3.19	3.35	3.56

Business Trends.

Year's New Enterprises Greatest Since 1901.

Nothing better illustrates the unexampled prosperity that featured general business in 1916 than the fact that more than 30,000 new enterprises, representing all lines of industry, were formed in the principal States during 1916. Papers filed in the Eastern States for companies with \$1,000,000 capital or over, represented the phenomenal total for the 12 months of \$2,708,326,500. This is an increase of about 90% over 1915 and over 200% as compared with 1914.

This is the largest total since 1901, when the United States Steel Corporation was organized under the laws of New Jersey with an authorized capital stock of \$950,000,000.

The grand total of all companies incorporated with a capital of \$100,000 or over, covering all States, reached the huge total of \$3,528,832,200, an increase of over 70% as compared with 1915 and about 125% as compared with 1914.

Following are the comparative figures as specially compiled by The Journal of Commerce and Commercial Bulletin of companies incorporated in the Eastern States during the last three years, with an authorized capital of \$1,000,000 or more:

	1916.	1915.	1914.
Jan. .	\$270,995,000	\$51,150,000	\$120,050,000
Feb. .	365,995,300	53,950,000	51,575,000
Mar. .	194,750,000	70,050,000	57,700,000
Apr. .	166,650,000	32,200,000	136,185,000
May. .	209,735,000	78,950,000	62,700,000
June. .	264,350,000	181,247,100	70,050,000
July. .	217,662,500	71,100,000	68,700,000
Aug. .	113,472,000	67,100,000	50,600,000
Sept. .	164,700,000	286,625,000	54,800,000
Oct. .	303,768,700	208,695,000	35,487,500
Nov. .	260,407,800	190,075,000	81,650,000
Dec. .	230,850,000	135,125,000	105,450,000

Total \$2,708,326,500 \$1,426,257,100 \$894,047,500

1916 Pig Iron Output Makes New Record.

Pig iron production operations were seriously curtailed in December as a result of the shortage of coke and cars so that the output during that month amounted to 3,171,087 tons or 102,293 tons a day compared with 3,311,811 tons, or 110,394 tons daily during November. Many blast furnaces were obliged to bank in December owing to non-arrival of coke and a number have gone out since then for the same reason, so that the Iron Age states that the capacity active on January 1st—101,975 tons a day for 311 furnaces—is not a criterion of January production. The net loss in furnaces last month was 11, those in operation on December 1st having numbered 322.

The year's total production, of course, was wholly unprecedented. The completed figures just compiled by the Iron Age indicate an output in 1916 of 39,032,792 tons, almost 10,000,000 tons over 1915, and more than 8,000,000 tons over the production of 1913 the previous record year.

The accompanying table gives the production of coke and anthracite pig iron in the United States by months for the last three quarters as reported by the Iron Age:

	1914.	1915.	1916.
January	1,885,054	1,601,421	3,185,121
February	1,888,670	1,674,771	3,087,212
March	2,347,867	2,063,834	3,337,691
April	2,269,655	2,116,494	3,227,768
May	2,092,686	2,263,470	3,361,073
June	1,917,783	2,380,827	3,211,588
July	1,957,645	2,563,420	3,224,513
August	1,995,261	2,779,647	3,203,713
September . . .	1,882,577	2,852,561	3,202,366
October	1,778,186	3,125,491	3,508,849
November . . .	1,518,316	3,037,308	3,311,811
December . . .	1,515,752	3,203,322	3,171,087

Total 23,049,752 29,662,566 39,032,792

Business Trends.

Some Financial Features of A Wonderful Year.

Nineteen hundred and sixteen will be recorded as one of the most epochal years in the commercial development of the United States. So far it is the greatest 12 months in the country's history, nearly all lines of trade and industry reporting hitherto unheard-of totals of production and trade volume. Yet, nothing demonstrates more forcibly the remarkable industrial activity that has swept all over the country than the fact that our exports of merchandise totaled \$5,475,000,000 in value, excelling those for the previous calendar year by 54%, and those for the year 1914 by 159%. Imports aggregated \$2,350,000,000, exceeding 1915 and 1914 by 32%. Gold imports totaled \$680,000,000, surpassing exports by \$530,000,000. Our gross imports of gold during the war have aggregated \$1,150,000,000, and the net imports \$865,000,000, while our sales of merchandise for the like period were considerably over double our purchases. Hence the estimates that we bought back \$2,000,000,000 of American securities, and, in addition, became creditors for an additional \$2,000,000,000 of foreign bonds or notes. As our export trade has grown since the war began, its character has gradually changed, and the early large shipments of food-stuffs have become dwarfed, partly because of crop shortages, by later enormous exports of manufactured goods—not all of these, by the way, munitions—though it must be said that our shipments to Entente countries have far exceeded those to the rest of the world at peace have hardly expanded as much as might have been hoped, though it is hard to see how our factory production, strained as it was to the breaking point, could have been further increased.

Stock speculation was more active than for a decade, total sales at the New York Exchange aggregating 230,060,900 shares, a gain of 32% on 1915, five times what it was in the "closed" year 1914, and only 20% less than in the record high year 1906.

Failures for the year, reflecting the

final closing out of old, crippled concerns and of new ventures insufficiently provided with experience, capital or other requisites, were large in number, second only to 1915 and 1914, from which they decreased 13 and 1.6%, respectively; but the rarity of important suspensions is shown in the volume of liabilities being the smallest with one exception since 1909, 40% below 1915, and less than half those of 1914.

Phenomenal Totals of Bank Clearings.

Record bank clearings, that dwarfed all standards of past years, were natural concomitants of the great surge forward made in practically all lines of human endeavor during the past twelvemonth and as a fitting climax to a wonderful year, exchanges for December eclipse any preceding monthly record, payments throughout the United States for that month aggregating \$27,075,561,609 while at New York they amounted to \$16,935,607,252, the largest sum ever registered and for the country outside of New York clearings for the first time in any month crossed the ten-billion dollar mark. The grand total reflects an increase of 1.7% over that reported for November, while comparison with December of 1915 and 1914 reveals increases of 33.7% and 115% respectively.

The total bank clearings in 1916 at 139 of the more important cities of the country, the last two days being estimated in at some cities, aggregated \$260,165,532,114, an excess of \$73,000,000,000, or 39% over 1915, itself a high record year, a gain of \$106,000,000,000, or 70% over 1914, the opening year of the war and the period of closed stock and cotton markets and an increase of 51% over 1912, the greatest year prior to the beginning of the European slaughter. It seems difficult to realize that the country's clearings in 1916 were over double those of only a dozen years ago, over three times those of the opening year of the century and nearly four times what they were in the year of the Spanish war, but such is the fact.

The Year in Iron and Steel.

A great many reviews of the year are being published. There is always quite a flood of them at this time. The mental attitude of the average reviewer is that he has "got something to write about this time!" and he goes to it, bringing out the "strong points," of which there are many.

As one wants a review only for purposes of guidance in future, let us be careful not to overrate 1916 in steel market history, for this is a time for conservatism. It was a wonderful year, of course. It was the first calendar year since 1906 in which the iron and steel making capacity was fully engaged throughout. Every one of the nine intervening years had a flaw at one end or the other, or all through, like 1908 and 1914. The steel mills reached capacity operations about September 1, 1915, so that they have had full operation for 16 months and naturally something has come of it. We want to inquire how much was psychology and how much was physical conditions, in this noteworthy market.

If it were possible to make a close estimate of what would have occurred if buyers had not bought so far ahead, if they had bought only half as far ahead, for instance, it would be possible to separate the physical from the psychological. The buyers' panic started in October, 1915, when the mills were sold up for five or six months ahead. The buying has continued until mills are sold up about nine months ahead. If buyers had bought no more than three or four months ahead, what would have occurred? Prices perhaps would not have advanced so sharply, though it is to be considered that the sharpest advances were for prompt deliveries, developing premiums for delivery. There have been no consumers seriously incommode**d by not receiving** adequate deliveries. If the regular buyers had held back, however, other buyers might have stepped in. The railroads, for instance, **migh**t have ordered cars and locomotives more freely early in 1916 if they had been assured of deliveries before the crop moving season.

There might have been heavier buying for export, for as it was export prices have generally ruled above domestic.

We estimate the 1916 production to have been as follows:

	Gross tons.
Pig iron	39,400,000
Steel ingots and castings ..	42,500,000
Rolled iron	1,500,000
Rolled steel	30,500,000
Total rolled	32,000,000

Eliminating from exports the scrap, pig iron, and cast material there is left as an estimate for the direct exports of the year about 5,200,000 gross tons, to which we add an estimate of the material consumed in **making good** for export, bringing the total to 8,000,000 gross tons of rolled iron and steel involved directly or indirectly in exports, or 25% of the production.

There is left 24,000,000 tons of rolled iron and steel for strictly domestic consumption.

Making similar computations for 1912 and 1913, the best years prior to the war as to both domestic trade and export, the percentage of export was about 11%, leaving 22,000,000 tons for strictly home consumption. Picking out the best 12 consecutive months in 1912-3, the quantity would be somewhat more, close to 24,000,000 tons.

Thus in say three and a half years there has been only a slight increase in domestic consumption. In some quarters there appears to have been a great increase in consumption, and a demand in excess of the **actual consumption**, which was regulated by deliveries. We do not think any material accumulated during 1916 in the hands of buyers. The increase was made possible by the fact that structural work fell off fully half a million tons, perhaps a million tons, while there was a decrease of at least a million tons, perhaps more, in the steel consumed in car and locomotive building.

Thus the high prices may have been produced as much by psychological as by physical conditions, but there is still the physical basis for the consumption of a great deal of iron and steel in the United States.

BRIEF SKETCH OF MARKET.

We shall attempt to review the year in iron and steel briefly, in a sort of tabloid form.

The course of prices is shown succinctly by our composites, of pig iron and finished steel respectively, as follows, starting from the low points that developed late in 1914:

	Pig. iron. Gross ton.	Fin. steel. Net ton.
Jan. 1, 1915 ...	\$13.030	\$28.45
Six months ...	— .020	+ 2.70
July 1, 1915 ..	13.010	31.15
Six months ...	+ 5.575	+10.35
Jan. 1, 1916 ...	18.585	41.50
January	+ .125	+ 2.30
February	— .050	+ 5.30
March	+ .345	+ 4.80
April	— .025	+ 1.50
May	— .020	+ .95
June	— .275	+ .50
July	— .110	.00
August	— .120	+ .90
September	+ .630	+ .50
October	+ 3.225	+ 3.45
November	+ 5.350	+ 5.75
December	+ 3.165	+ 3.80
Jan. 1, 1917 ...	30.825	71.25
Advance, 1915 ..	+ 5.555	+13.05
Advance, 1916 .	+12.240	+29.75

Thus pig iron had its ups and downs in the first six months of 1915 and in the first eight months of 1916, scoring clear advances only in the last six months of 1915 and the last four months of 1916.

Finished steel advanced slowly in the first half of 1915, then much more rapidly in the second half while the average rate in 1916 was still more rapid, but the market had a very close escape from having a backset in the summer of 1916.

Exports and Domestic Consumption.

On the basis of rolled iron and steel

we estimate that exports, direct and indirect, absorbed 25% of the production, the remaining 75% going into strictly domestic consumption. A small part of that was in machinery, buildings, etc., for factories making exported goods.

Distribution of Consumption.

The amount of demand for steel for various classes of consumption may be described as follows:

	Strictly domestic.	Direct export.	Indirect export.
Rails	Moderate	Heavy	.....
Rolling stock	Moderate	Nil	Fair
Automobiles	Heavy	Nil	Heavy
Shell steel	.....	Decreased	Increased
Mach. steel	Heavy	Nil	Heavy
Structural	Light	Light	Light
Sheets	Heavy	Heavy	Mod.
Tin plate	Heavy	Heavy*	Mod.
Boiler tubes	Heavy*	Heavy	Heavy
Pipe	Heavy	Mod.	Light
Ship plates	Heavy*	Heavy*	Mod.
Other plates	Heavy	Light	Light
Wire	Heavy	Heavy	.....
Barb wire	Heavy	Heavy*	.....
Wire nails	Heavy	Heavy	.....
Unfin. steel	Heavy	Heavy*	Light

*Particularly heavy.

The adjectives are all used to express the relation between demand in 1916 and the ordinary normal demand. Where there is a blank, there is no trade. Rails, for instance, are exported directly but are not manufactured into goods for export. Material for railway rolling stock, on the other hand, was in moderate demand for making of locomotives and cars for export, hence appears as indirect exports, but there was practically no steel exported directly to foreign builders of rolling stock.

Railroad Buying in 1916.

Cars and Locomotives Ordered and Built, and Railway Construction.

The Railway Age Gazette presents its usual annual summary of railway developments. The United States and Canada are taken together, both as to the railways and as to the car and locomotive shops. This may be convenient for the purpose for which the compilation is made, but our readers, who regard the industry of the United States as one unit and the industry of Canada as another unit, would probably prefer a segregation. The operations in Canada, however, can be estimated roughly and constituted only a small part of the total.

In the table below "domestic" covers the United States and Canada, while "export" means overseas business.

Orders in 1916.

	—Cars—		
	Locomotives.	senger.	Freight.
Domestic .	2,891	2,540	165,324
Export ...	2,983	109	34,214
Total ..	5,874	2,649	199,538

Of the above at least 57 domestic and 90 export locomotives were taken by Canadian shops, with at least 3,719 domestic and 6,000 export freight cars.

Domestic orders alone, placed by railways in the United States, Canada and Mexico, are as follows:

Number of Locomotives and Cars Ordered.

Year.	—Cars—		
	Locomotives.	senger.	Freight.
1901	4,340	2,879	193,439
1902	4,665	3,459	195,248
1903	3,283	2,310	108,936
1904	2,538	2,213	136,561
1905	6,265	3,289	341,315
1906	5,642	3,402	310,315
1907	3,482	1,791	151,711
1908	1,182	1,319	62,669
1909	3,350	4,514	189,360
1910	3,787	3,881	141,204
1911	2,850	2,623	133,117
1912	4,515	3,642	234,758
1913	3,467	3,179	146,732
1914	1,265	2,002	80,264
1915	1,612	3,101	109,792
1916	2,891	2,540	165,324

Cars and locomotives built are reported as follows:

Year.	—Cars—		
	Locomotives.	senger.	Freight.
1899	2,475	1,305	119,886
1900	3,153	1,636	115,631
1901	3,384	2,055	136,950
1902	4,070	1,948	162,599
1903	5,152	2,007	153,195
1904	3,441	2,144	60,806
1905	5,491	2,551	165,155
1906*	6,952	3,167	240,503
1907*	7,362	5,457	284,188
1908*	2,342	1,716	76,555
1909*	2,887	2,849	93,570
1910*	4,755	4,412	180,945
1911*	3,530	4,246	72,161
1912†	4,915	3,060	152,429
1913†	5,332	3,296	207,684
1914†	2,235	3,691	104,541
1915†	2,085	1,949	74,112
1916†	4,075	1,839	135,001

* Includes Canadian output.

† Includes Canadian output and equipment built in railroad shops.

Railway Construction.

New roads built in 1916 totaled 1,098 miles in the United States and 290 miles in Canada, comparing with 1915 construction, 933 miles in the United States and 718 miles in Canada.

Statistics are also gathered of the laying of second, third and fourth track, but there are no statistics as to yard and siding track. The figures for four years past are as follows, for the United States alone:

	Second, etc.		
	New Line	Track.	Total.
1913	3,071	1,396	4,467
1914	1,532	595	2,127
1915	933	65	998
1916	1,098	312	1,410

The Business on Books.

By comparison of the figures it is possible to arrive at an estimate of the business on books, provided there have been no important cancellations in the past two years. As there were few cars and locomotives ordered in the second half of 1914, and as the number built in

the year considerably exceeded the number ordered, it may be assumed that the car and locomotive shops entered 1915 with practically clear order books. Then we have, taking the total of all orders placed, domestic and export, and all cars and locomotives built, United States and Canada, the following showing:

Locomotives.

Ordered in 1915	2,462
Built in 1915	2,085

Carried over'	377
Ordered in 1916	4,074

Total	4,451
Built in 1916	4,075

Carried over	376
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Freight Cars.

Ordered in 1915	128,014
Built in 1915	74,112

Carried over	53,902
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Freight Cars.

Ordered in 1916	199,538
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Total	253,440
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Built in 1916	135,001
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Carried over	118,439
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It is possible that some locomotive orders were missed. Even allowing for the fact that locomotive shops are busy with other things, and have difficulty in securing material and appurtenances the carrying over of anything like so small a number as 376 locomotives does not comport with the recent booking of export orders, as had been done lately, for delivery in November and December, 1917, and even January and February, 1918.

As to the freight cars apparently carried over, it is to be noted that ten years ago, in 1907, 284,188 freight cars were built in a year, that having been the record.

New Aspects for the Tariff.

For a subject that two opposing political parties have argued upon along practically the same lines for a couple of generations the tariff question has been going through kaleidiscopic changes of late. A Democratic Congress has enacted a new tariff on dyestuffs, along purely protective lines, and now the Democratic party, the party of "tariff for revenue only" is coming to realize what a difficult thing it is to formulate a tariff that will produce a desired revenue. The protectionist party never had any such difficulty in carrying out its theory.

The idea of free raw materials has worked out particularly badly. Certainly the framers of the present tariff had no idea that their free list would result in 67% of our imports coming in free, yet that is the showing made thus far this year. The average ad valorem rate of duty on all imports this year has been only 9.19%. The proportions are extreme, for the reason that the manufacturing nations are at war. We can import raw materials, and do, very freely, but manufactured

goods are difficult to find.

Nine months ending September, 1913, under the old tariff, showed \$1,327,385.-071 imports, of which 52.82% was free, and duties collected \$237,730,144, the average ad valorem rate being 20.97%. The corresponding nine months this year showed imports of \$1,831,174,668, with 67.28% free and duties collected \$164,631,534, the average ad valorem rate being 9.19%. The percentages we give do not work out from the values cited, because the imports stated are "general imports" while the ad valorem rates are computed against "imports for consumption." They are correct for comparative purposes, however. Thus imports enormously increased but the revenue fell off. The tariff would have worked badly for the Government in any event, but it has worked particularly badly for the Government on account of the war. For industry in general the war's taking the place of a tariff has been a good thing.

The tariff commission was expected to find out what duties would be for the

best interests of the people but the problem now before Congress is what tariff is best for raising revenue. Whether such a question can be considered by the commission will have to be decided. Such a duty was not contemplated when the commission was authorized.

There is going to be considerable debate upon how the United States should view England's turning to a protective tariff. When England was a creditor nation and drew revenue from all over the world, free trade was

held to be a good thing, for an unfavorable merchandise balance of trade was not necessarily undesirable. During the same period the United States was a debtor nation and had a protective tariff. Now the conditions as to debtor and creditor are to be reversed and there is going to be argument whether that should mean that the countries should have opposite tariff policies or that both should go in equally for protective duties. This, of course, is only one of many angles from which the tariff matter must be viewed.

Government Reports on Metals.

Copper Industry In 1916.

Immense Increase in Production.

The production of copper in the United States in 1916 surpassed all previous records, according to the United States Geological Survey, Department of the Interior. Preliminary figures and estimates have been collected by B. S. Butler, who has received reports from all plants known to produce blister copper from domestic ores and refined copper. At an average price of about 27 cents a pound the output for 1916 has a value of \$520,000,000, compared with \$242,900,000 for the output for 1915 and with \$189,790,000 in 1913.

The figures showing smelter production from domestic ores represent the actual production of most of the companies for 11 months and an estimate of the output for December. The figures of a few companies for November were not available, and these companies furnished estimates for the last two months of the year.

According to the statistics and estimates received, the output of blister and Lake copper from domestic ores was 1,928,000,000 pounds in 1916, against 1,388,000,000 pounds in 1915, and 1,224,000,000 pounds in 1913.

The output of refined copper (Electrolytic, Lake, Casting, and Pig) from primary sources, domestic and foreign, for 1916, is estimated at 2,311,000,000 pounds, compared with 1,634,000,000 pounds in 1915 and with 1,615,000,000 pounds in 1913.

The production of copper from the mines of the United States for 1916 was more than double that of ten years ago and more than four times that of 20 years ago. The profit resulting from the domestic production was far greater in 1916 than in any previous year. It is probably safe to say that it exceeded \$300,000,000.

Foreign Trade and Domestic Consumption.

According to the Bureau of Foreign and Domestic Commerce, the imports of all forms of unmanufactured copper for the first ten months of 1916 amounted to 397,594,000 pounds. This compares with an import of 265,677,000 pounds for the first ten months of 1915. The imports for the 12 months of 1915 were 315,698,449 pounds.

The exports of pigs, ingots, bars, plates, sheets, rods, wire, etc., for the first ten months of 1916, as determined by the Bureau of Foreign and Domestic Commerce, amounted to 655,472,000 pounds, compared with an export for the first ten months of 1915 of 529,286,000 pounds. The exports for the 12 months of 1915 were 681,917,000 pounds.

At the beginning of 1916 there was about 82,400,000 pounds of refined copper in stock in the United States. This quantity added to the refinery production gives a total available supply of about 2,393,000,000 pounds of refined copper. On subtracting from this amount the exports for the first ten months and the estimated export for the last two months, it is apparent that the supply available for domestic consumption is materially greater than the 1,043,000,000 pounds of 1915, no account being taken of stocks held at the close of the year.

Higher Prices in 1916.

The average price of copper for 1916 showed a marked increase over that of the preceding year, being slightly above 27 cents a pound, compared with 17.4 cents in 1915.

Much of the copper was sold several weeks or months in advance of delivery, and it is therefore probable that the actual average price received differs somewhat from the average of the daily quotations for

immediate delivery. The general trend of the market would indicate that the actual price received may be below that indicated by the average of quotations.

Record by States.

Arizona made a record production. The total may reach 675,000,000 pounds as compared with 432,000,000 pounds in 1915. This exceeds the total output of the United States as late as 1902.

Montana, with more than 350,000,000 pounds, exceeded its previous record production of 314,900,000 pounds in 1912. This compares with about 268,000,000 pounds produced in 1915.

Michigan, in common with the other important copper-producing States, made a record production. The output for 1916 was about 269,000,000 pounds, as compared with about 238,900,000 pounds in 1915, the previous record production.

Utah may show an increase of 60,000,000 pounds over the previous record produc-

tion of 175,000,000 pounds in 1915.

The output from Alaska estimated at over 120,000,000 pounds compares with 70,600,000 pounds for 1915.

The production from Nevada will nearly reach 100,000,000 pounds, which compares with the previous largest production of 85,200,000 pounds in 1913 and with 67,700,000 pounds in 1915.

The production of New Mexico will probably reach 90,000,000 pounds as compared with 62,800,000 pounds for 1915.

California, with a production that may exceed 60,000,000 pounds, showed a large increase over the previous record production of over 53,000,000 pounds in 1909. In 1915 the production was 37,600,000 pounds.

Tennessee alone among the important copper-producing States failed to show a record output. The production was probably slightly below 15,000,000 pounds, as compared with over 18,000,000 pounds for 1915.

Lead Industry in 1916.

The lead industry in 1916 made good gains in output, both in mining and smelting. The lead content of ore mined in the United States in 1916 was about 622,000 short tons, compared with 561,639 tons in 1915, an increase of 60,000 tons, or over 10%. The average price of lead in 1916 was so much higher than in 1915 that the increase in value of the mine output of lead was about 50%.

The State that recorded the largest gain in lead production was Missouri, which made an increase of over 25,000 tons. Good gains were also made by California, Idaho, Nevada, Utah, and New Mexico.

The following estimates have been compiled without change by C. E. Siebenthal from reports made to the United States Geological Survey, Department of the Interior, by all the lead refineries and soft-lead smelters in operation during the year. These reports give records of the actual production for the first ten or 11 months and estimates of the output for the remainder of the year. The statistics of imports, exports, and lead remaining in warehouse have been made up from the records of the Bureau of Foreign and Domestic Commerce for ten or 11 months and estimates for the remainder of the year.

Record-Breaking Production.

The production of refined lead, desilverized and soft, from domestic and foreign ores in 1916 was 579,600 tons, worth at the average N. Y. price \$78,826,000, compared with 550,055 tons, worth \$51,705,000, in 1915, and with 542,122 tons, worth \$42,286,000, in 1914. The figures for 1916 do not include

an estimated output of 21,800 tons of antimonial lead, worth approximately \$4,283,000, compared with 23,224 tons in 1915 and with 16,667 tons in 1914. Of the total production, desilverized lead of domestic origin, exclusive of desilverized soft lead, is estimated at 324,000 tons, against 301,564 tons in 1915 and 311,069 tons in 1914; and desilverized lead of foreign origin at 21,400 tons, compared with 43,029 tons in 1915 and 29,328 tons in 1914. The production of soft lead, mainly from Mississippi Valley ores, is estimated at 234,200 tons, compared with 205,462 tons in 1915 and 201,725 tons in 1914. The total production of desilverized and soft lead from domestic ores was thus about 558,200 tons, valued at \$75,915,000, compared with 507,026 tons, valued at \$47,660,000 in 1915, a gain of 51,000 tons. Of this gain in domestic production, about 29,000 tons was made in soft lead and 22,000 tons in domestic desilverized lead.

In consequence of the great demand for lead a considerable quantity of secondary lead (about 7,000 tons) and secondary antimonial lead (over 5,000 tons) was recovered at the regular smelters.

The final figures for the production of soft lead will show an increase of a few thousand tons over those here given, for the reason that the smelters and refiners of argentiferous lead undoubtedly treated more or less soft lead ore from the Mississippi Valley which in their preliminary estimate is not distinguished from silver-lead ore.

Imports and Exports.

The imports of lead are estimated at 20,-

600 short tons of lead in ore, valued at \$1,575,000; 9,200 tons of lead in base bullion, valued at \$1,091,000; and 6,000 tons of refined and old lead, valued at \$803,000, a total of 35,800 tons, valued at \$3,468,000, compared with 51,496 tons in 1915. Of the imports in 1916 about 19,500 tons came from Mexico, against 47,124 tons in 1915.

The exports of lead of foreign origin smelted or refined in the United States showed a great decrease. They were estimated at 9,350 tons, worth \$3,468,000, against 38,445 tons in 1915 and 31,051 tons in 1914. This does not include foreign lead manufactures exported with benefit of drawback, which amounted to 4,744 tons in the first half of 1916. For the last three years notable quantities of domestic lead have been exported to Europe, and the total for 1916 is estimated at 108,200 short tons, valued at \$14,787,000, compared with 87,092 tons, valued at \$7,796,998, in 1915.

Lead Available for Consumption.

The amount of lead available for consumption during 1916 may be estimated by adding to the stock of foreign lead (domestic stocks are not known) in bonded warehouses at the beginning of the year (12,169 short tons) the imports (about 35,800 tons) and the domestic production (558,200 tons) making an apparent supply of 606,169 tons. From this are to be subtracted the exports

of domestic lead (108,200 tons), the exports of foreign lead (about 9,350 tons), the foreign lead contained in articles exported with benefit of drawback (about 9,000 tons), and the stock in bonded warehouses at the end of the year (assumed to be the same as at the end of November, 8,387 tons), leaving as available for consumption 471,200 tons, compared with 426,751 tons in 1915.

High Prices Prevail.

Lead began the year at New York with a price of 5.5 cents a pound, the minimum price of the year, and rose to 8 cents early in April, this being the maximum figure. A long decline carried the price down to 5.95 cents a pound in the early part of August. Another rise reached 7 cents about the middle of September, after which the price remained stationary until early in December, when it advanced to 7.5 cents, and it closed the year at about that figure. The average New York price for the year was 6.8 cents, compared with 4.7 cents in 1915, 3.9 cents in 1914, and 4.4 cents in 1913.

The London price of lead was higher than the New York price for the first quarter but below it for almost the whole of the last three quarters of the year. The average price of lead at London during 1916 was about £31 1s .7d a long ton (6.7 cents a pound).

Zinc Industry in 1916.

The zinc mining and zinc smelting industries experienced a year of prosperity in 1916. According to the best information available at this time the recoverable zinc content of ore mined in the United States was about 708,000 tons, compared with 605,915 tons in 1915, and 406,959 tons in 1914. The largest district gain was made by the Joplin region, which had an increase of over 40,000 tons.

The following figures have been compiled without change by C. E. Siebenthal, of the United States Geological Survey, Department of the Interior, from reports furnished by all operating smelters of zinc ores except one small plant, showing their output for the first 11 months of the year and their estimated output for December. The production of the smelter not reporting, which operated intermittently, has been estimated on the basis of its output for the first half of the year. Figures showing the imports and exports of 10 or 11 months were obtained from the Bureau of Foreign and Domestic Commerce, and to these figures have been added estimates for the remainder of the year.

Increase in Capacity for Zinc Ore Reduction.

There was much activity in the construc-

tion of retort zinc smelters during 1916, and considerable additions are under construction or planned for 1917. The number of retorts at the beginning of 1916 was 156,568 on July 1st it was 196,640, and at the end of the year it was 213,840, besides 13,648 additional retorts being built or planned.

The full retort capacity was not utilized in smelting ore at any time during the year. A large number of retorts were occupied in redistilling prime western spelter. Many retorts were idle during parts of the third and four quarters of the year, but started up again late in the year, though a considerable number (14,725) were still idle in December.

Two new smelters using large graphite retorts were built during 1916. There are now five such plants, with 153 retorts.

Six electrolytic zinc plants were in operation in 1916. Four units of the large Anaconda plant at Great Falls, Mont., went into operation, and it is thought that the last unit will be completed about the first of 1917. The small Anaconda electrolytic plant at Anaconda, Mont., has been dismantled.

Record Production.

The production of spelter from domestic

ore in 1916 is estimated at 553,000 short tons, worth, at the average St. Louis price about \$150,000,000, and from foreign ore at 105,000 tons, a total of 658,000 tons, worth \$180,000,000, compared to a total of 489,519 tons in 1915 (458,135 tons of domestic origin, and 31,384 tons of foreign origin), worth \$121,400,000 at the average St. Louis price. This was a gain of 169,000 tons in quantity and an indicated gain of more than \$58,600,000 in value. The actual gain in value, however, was considerably less because much of the spelter was sold for future delivery at prices from one to two cents below the quotations for immediate delivery. Included in the output is 11,878 tons of electrolytic spelter, of which a part was refined by electrolysis from prime western spelter. The output of zinc dust was about 2,500 tons, compared with 1,755 tons in 1915.

The output of secondary spelter distilled at regular smelters and at the smelters with large retorts was about 32,000 tons. It is probable that the output of remelted spelter was not less than that of the preceding year, 23,000 tons, which would give a total of 55,000 tons of secondary spelter. Adding this to the production of primary spelter gives a grand total of 713,000 tons of spelter made in the United States in 1916.

The production of primary spelter from both domestic and foreign ores, apportioned according to the States in which it was smelted, by six-month periods, was as follows:

Spelter Production, 1915-1916, by States in short tons.

State.	1915.		1916.	
	1st half.	2nd half.	1st half.	2nd half.
Illinois ...	74,982	84,976	90,082	90,268
Kansas ..	35,247	66,176	74,592	65,924
Oklahoma.	51,172	58,036	73,298	90,790
Other				
States ..	55,131	63,799	78,480	95,054
	216,536	272,987	316,452	342,036
	489,519		658,488	

Largest Increases in Exports of Spelter and Brass.

Exports of spelter and sheets made from domestic ore are estimated at 167,000 short tons, worth \$52,200,000, compared with 118,603 tons, worth \$29,537,680 in 1915. Exports of spelter made from foreign ore are estimated at 43,500 tons, valued at \$7,500,000, compared with 13,720 tons in 1915. The exports of zinc manufactures fell off to \$573,000 in 1916, from \$2,173,089 in 1915. The exports of brass are estimated at 110,300 tons, valued at \$65,085,000, compared with

33,136 tons, worth 12,435,906, in 1915. Manufactures of brass were exported to the value of about \$237,300,000, compared with \$41,117,771 in 1915. The value of cartridges exported in 1915 was about \$59,000,000, as against \$24,814,679 in 1915. The exports of domestic zinc ore were about 78 short tons, valued at \$3,992, compared with 832 tons in 1915.

The imports of spelter (mostly scrap, probably) are estimated at 600 short tons, valued at about \$100,000, compared with 904 tons in 1915. Zinc dust was imported to the amount of 900 tons, worth \$330,000. The imports of zinc ore in 1916 were approximately 371,000 short tons, containing about 140,000 tons of zinc and worth about \$11,800,000, compared with 158,852 tons of ore, containing 57,669 tons of zinc in 1915.

Domestic Consumption Increased; Stocks Reduced.

The apparent domestic consumption of spelter in 1916 may be computed as follows: The sum of the stock on hand at smelters at the beginning of the year 14,253 tons, plus the imports, 600 tons, and the production, 658,000 tons, gives the total available supply—672,853 tons. From this are to be subtracted the exports of domestic spelter and sheets, 167,000 tons, the exports of spelter made from foreign ore, 43,500 tons, and the stock on hand at smelters at the end of the year (to be exact, on December 15th), 17,300 tons, or a total of 227,800 tons, leaving a balance of 445,000 tons as the apparent domestic consumption. This calculation takes no account of the stocks of spelter held by dealers or consumers. On comparing the consumption in 1916 with the 364,382 tons consumed in 1915 and the 299,130 tons consumed in 1914, it appears that the indicated consumption is large, because the exports of brass and manufactures of brass were large.

The stock of spelter at smelters on December 15th shows a reduction of 6,500 tons when compared with the 23,879 tons shown by the midyear figures.

Continued High Price of Spelter.

The average price for the year for immediate delivery at St. Louis was 13.7 cents a pound, compared with 14.2 cents a pound in 1915 and 5.1 cents in 1914.

The price of spelter in London was uniformly about two cents a pound higher during the year than at St. Louis.

The average London price for the year was about £72 7s 7d a long ton (15.7 cents a pound).

Topical Talks on Iron.

XLV.—The Minette Ore District.

It has been said that it was more or less by chance, in our treaty making with Great Britain, that substantially the whole of the Lake Superior iron ore deposits came to be included within our borders. The line might have started at the western extremity of Lake Superior, and that would have given Canada the major portion of the deposits.

The Minette ore district in Europe, which in 1913 produced more iron ore than the Lake Superior region shipped in any year prior to 1912, did not have the luck to fall under one ownership, and thus it has been a bone of contention in war time while in peace times its ores have been moved from one country to another.

The Minette (French, indicating finely divided) ore district, sometimes called the Lorraine-Luxemburg district, is practically a rectangle, 60 miles north and south and 20 miles east and west. It lies just where France, Belgium, Luxemburg and Germany come together, the major part lying in France, with a narrow strip running north and south just inside Germany's western border, while a small part extends northeast into Luxemburg and a small part north into Belgium.

In 1813 the district produced nearly 45,000,000 gross tons of ore, but this was sufficient to produce only a trifle less than 15,000,000 tons of pig iron as the ore is low in iron content, less than half the pig iron that will be made from the Lake Superior ore shipped in 1916. While the ore is low in iron content, ranging from extremes of 28 to 40%, and generally averaging 30 to 33%, it partially makes up for this leanness by large contents of lime, whereby with proper mixing it is altogether self-fluxing, whereby the coke consumption is not nearly as large as would be the case if the impurities were all useless. The ore lies in almost horizontal veins, extending chiefly under a plateau in France, but outcropping in Germany.

The relatively small portion of the to-

tal area that lies in German Lorraine (Lathringen) which was acquired at the close of the Franco-Prussian war. Since then Germany has built up an iron and steel industry in the immediate territory, based on the Minette ores, and has also developed her iron and steel industry in other districts, notably Westphalia, largely on Minette ores.

The French have also built up an iron and steel industry based on Minette ores. The ores vary from place to place and must be mixed properly. For this reason and others there was built up before the war a system of interchange. In 1913 France exported to Germany about 4,000,000 tons of ore, and received about one-fifth as much in return, while Luxemburg imported a large tonnage of Lorraine ore and a considerable tonnage went from Luxemburg to Belgium.

The treaty that ends the war can fix the geographical boundaries between the countries wherever the exigencies of the case dictate, for it is simply a matter of drawing a pencil over the map, but there is no conceivable arrangement that can set up reasonable commercial conditions, on account of the interchange of ore upon which the alignment before the war was based. If the geographic boundary be continued, Germany is deprived of an important source of ore supply, while France is left with ore on her hands. If the boundary be pushed east, it takes in ore that belonged to France before the Franco-Prussian war, when its value was not recognized, and it also takes in large iron and steel works which the Germans have built, and which, moreover, have always been operated with German coal brought from the east. If the line be pushed west it takes in iron and steel works the French have built, and which have hitherto been operated with coal brought from Valenciennes, 150 miles northwest, in France, or imported from Belgium. Thus with the non-intercourse policy of the Allies there would have

to be great economic changes, and still greater changes if the geographical boundary was altered. Either the industries will be crippled or they will be forced to expand so as to produce more iron and steel, on the whole, than ever before.

Correction.

In the November Talk, on the basic

steel making process, a typographical error occurred in the names of the inventors. The names should read: "Sidney Gilchrist Thomas and Percy C. Gilchrist." Our attention has been called to the matter by a reader who was personally acquainted with both inventors.

Steel Plants.

XIV.—The Lorain Works.

One of the causes assigned by the daily press at the time for the formation of the United States Steel Corporation was the threat of Andrew Carnegie to build a pipe mill at Conneaut Harbor, O., which would have been a menace to the National Tube Company, one of Mr. Morgan's consolidations, and the formation of the United States Steel Corporation would prevent that "useless new construction."

The main awkward feature about the story was that when the Steel Corporation was formed one of the first plans it undertook was to build a pipe mill very near Mr. Carnegie's alleged location. For this purpose the Lorain steel works were used as a base of supplies.

This Lorain steel plant had rather an interesting history, whether considered from the commercial or the "human interest" side. In 1888 the late "Tom" L. Johnson and associates completed a plant at Johnstown, Pa., comprising a small rail mill, for rolling special street car rails, with a frog and switch department, a small open-hearth steel plant having been added shortly afterwards. In order to expand the business it was decided to locate on the shore of Lake Erie, where blast furnaces could be built and ore taken direct from vessel, saving the inland freight. Work on the plant was started about the beginning of 1894, when the industrial depression was very severe. The Republicans blamed the depression on the Democratic administration, and it is possibly because "Tom" Johnson was a Democratic senator at the time that he felt he should "make good" by building a new steel plant. When the tariff was up for discussion the Hon-

orable "Tom" advocated free rails, saying he was himself a rail-maker, but the opposition consulted the patent office and found that he was the proud, though not boastful, owner of a long line of patents on the varieties of rails he produced. All of which was very interesting politically.

An interesting point in the history of the Lorain plant was that while it was located on the shore of Lake Erie, in order to secure the lowest assembly cost for the blast furnaces, the steel plant was put in operation April 1, 1895, while the first blast furnace was not blown in until July 5, 1899, four years later.

The theory of the lake front operation was that there is almost twice as much ore as coke to be moved to the blast furnace, while the coke had to be loaded on cars anyway and it would not cost much more to move it an extra distance, while the rail haul on the ore could be avoided entirely.

In the interim, valley pig iron was used. There was no Cleveland pig iron market then and the cost of pig iron at lake front was usually the valley price plus freight.

The Johnson works at Lorain was very well equipped and represented the most modern ideas. The writer recalls visiting it in 1895 and being shown a whole building devoted, not to spare rolls, but to complete mills. The idea was that it was quicker and better to effect a roll change by changing the whole mill, the spare mill having been previously set up with the desired rolls. Mills have grown so heavy since then that the plan would hardly be feasible now, except in special instances.

The Johnson Company operated both the old Johnstown works and the new works at Lorain, O. It was re-organized as the Lorain Steel Company which was absorbed by the Federal Steel Company, September 9, 1898, together with the Illinois Steel Company and some ore and steamship interests. The Federal Steel Company was taken into the United States Steel Corporation, which began business April 1, 1901. On December 31, 1903, the National Tube Company of Ohio was formed to take over the Lorain plant and the National Tube Company act as sales agent. The Lorain Steel Company survives as a subsidiary of the Steel Corporation, with the Johnstown plant, comprising

steel foundry, frog and switch works, etc.

The present Lorain plant comprises five blast furnaces, rated at 817,000 gross tons of pig iron a year, two 12-ton Bessemer converters, six 75-ton and four 85-ton basic open-hearth furnaces, 28-inch two-high three-stand girder rail mill, one reversing skelp mill and one continuous skelp mill and one sheared and one universal plate mill for rolling skelp and 11 pipe welding furnaces, producing black and galvanized pipe, the largest size being 20-inch. The capacity is rated at 610,000 tons of Bessemer ingots and 590,000 tons of open-hearth ingots, the finished product apart from intermediate products being rated at 216,000 tons of rails and 410,000 tons of pipe.

Railroad Earnings.

Railroad earnings per mile of road, of roads having annual operating revenues above \$1,000,000, this being about 230,000 miles or about 90% of the total steam railway mileage; compiled by the Bureau of Railway Economics from reports furnished the Interstate Commerce Commission.

	1913-14			1914-15			1915-16		
	Revenue.	Expenses.	Net.	Revenue.	Expenses.	Net.	Revenue.	Expenses.	Net.
July	\$1,183	\$837	\$346	\$1,127	\$786	\$341	\$1,130	\$750	\$380
August ..	1,244	856	388	1,174	788	386	1,190	764	426
September	1,257	854	403	1,185	783	402	1,251	774	477
October ..	1,314	891	423	1,171	787	384	1,323	815	508
November	1,180	884	337	1,026	734	292	1,303	800	503
December	1,116	821	296	993	730	263	1,253	802	451
January ..	1,021	795	226	939	718	221	1,133	797	336
February .	914	746	168	900	680	220	1,140	800	340
March	1,091	801	290	1,015	722	293	1,260	844	416
April	1,038	782	256	1,013	724	289	1,223	827	396
May	1,047	800	247	1,044	735	309	1,307	857	450
June	1,097	789	308	1,094	732	362	1,302	851	451
Fiscal year	13,483	9,801	3,682	12,678	8,915	3,763	14,818	9,684	5,134

	1916-17		
	Revenue.	Expenses.	Net.
July	\$1,315	\$848	\$467
August ..	1,418	882	536
September	1,409	881	528

Iron and Steel in 1916.

Most Wonderful Year in Steel Industry's History—The Records Made— Historic High Prices—Analysis of the Demand.

It is not well to deal in superlatives or high flown adjectives in discussing the year 1916 in the iron and steel industry. There is a strong temptation, but these summaries and analyses are of interest only as guidance for the future, and as we enter 1917 we all realize that it is a time for conservatism, for calm, sober judgment, a time when, if we have acquired any false notions, we ought promptly to shake them off.

It was just a year ago that Chairman Gary of the United States Steel Corporation made public his "Stop, look and listen" statement, a memorable but perhaps not very well remembered analysis and comment. His expression of fear lest there was inflation at the time was followed by a twelvemonth of the most spectacular price advances in the history of the industry. How much more in point now is the injunction to "Stop, look and listen"!

While 1916 was easily the most wonderful year in the history of the American steel industry, that industry is only about a quarter century old. It was in 1892 that the number of puddling furnaces started to decrease. The production of soft steel had been increasing rather sharply, but was not very large even then. A short time afterwards, perhaps in 1894 or 1895, the production of soft steel exceeded the production of wrought iron. The boom of 1889, following the long industrial depression, witnessed rapid price advances, but only after the mills were very well sold up, and they did not profit greatly by the advances. The foundation of the sold up condition of the mills, indeed, had been laid by a "rail war" in which hundreds of thousands of tons of rails were sold at less than \$18. Cheap rails were being delivered throughout the 1899 boom. There were roads which secured much higher prices per ton for the old rails they pulled up than they paid for the new rails they laid down.

Since 1899 the steel market has had

its ups and downs, the recent advance having been the fifth upward movement (1902, 1905-1906-7, 1909, 1912, 1915-6) since the 1899 boom. As a matter of fact there were no calendar years of full steel mill activity between 1906 and 1916, and thus it is not altogether surprising that prices advanced as they did, particularly as men's minds were open to paying almost any price, on account of the war, while mills felt no conservatism, for several reasons: (1) The prosperity could not be nursed by holding down prices, as it would probably last to the end of the war, no less and no more. (2) At the beginning of 1916 steel prices had reached the traditional "safe" level, the high point of 1907, and there was no power to hold them down. There was fiercer competition among buyers to buy than there had been among sellers to sell. Reversing the ordinary nomenclature, it was a "buyers' market". (3) The "steel suit" had been decided June 3, 1915, altogether in favor of the Steel Corporation, except that the "Gary Dinners", etc., were roundly condemned, hence the steel trade could see no prospect of being able to hold prices up in future, hence if it had to take the bitter, why not take the sweet, when temptingly offered it on a silver plate?

The Records.

It chanced that the years 1912, 1913 and 1915 were years of substantially the same tonnages in the various standard items that are customarily compared, Lake Superior iron ore shipments, pig iron production, steel ingot production, rolled steel production, etc. These records were broken by from 25 to 32%, Lake Superior ore movement having been in excess of 66,000,000 tons, while production was approximately as follows: Pig iron, 39,400,000 tons; steel ingots and castings, 42,000,000 or 43,000,000 tons; rolled iron, 1,500,000 tons; rolled steel, 30,500,000 tons. In recent times the largest percentage by which pig iron production broke its

former record was the 28% by which the 1905 production of 22,992,380 tons broke the previous record made in 1903. The 39,400,000 tons production in 1916 broke the previous record of 1913 by about 27%.

Previous High Records.

In the editorial department of this issue there is given a concise statement of the pig iron and steel price advances that occurred in 1915 and 1916. From the low point of December, 1914, there was a total advance in pig iron of nearly \$18 per ton, and an advance in finished steel products of nearly \$43 per net ton. In the case of each product approximately 31% of the advance occurred in 1915, the 1916 advance involving 69%.

The price levels reached passed all re-

cent records, and it is necessary to go back to the brief period from about Sept., 1879 to April 1880, to find pig iron prices as high, and there is no parallel for steel, as one has to go back to that same period and then the comparison is with wrought iron, substantially the same material, for commercial purposes. During that period of six or seven months prices were higher. Still farther back one finds prices as high only in the spring of 1874 and a number of years preceding, approximately ten years. Perhaps it is only a coincidence, but it is a fact that very high prices for pig iron and wrought iron were reached late in our Civil War, and prices remained very high for about nine years after the close of the war. It was not because the iron industry was in its "infancy" or anything of that sort,

Pig Iron Prices.

(Averaged from daily quotations; at Philadelphia, Buffalo, Cleveland and Chicago, prices are delivered.

	Bessemer.	Basic.	No. 2 fdy.	Basic.	No 2 X fdy.	Cleve-	No. 2 fdy.	Ferro-	Fur-		
1915	Valley	Valley	Phila.	Phila.	Buffalo.	land.	Chi-	mangan-	nace		
							cago.	ingham.	coke x		
Jan. . .	13.75	12.50	12.75	13.50	14.45	13.25	13.25	13.45	9.50	68.00	1.55
Feb. . .	13.64	12.50	12.75	13.50	14.50	13.25	13.25	13.50	9.50	68.00	1.55
Mar. . .	13.60	12.50	12.75	13.50	14.05	12.74	13.25	13.39	9.42	78.00	1.53
April . .	13.60	12.50	12.75	13.40	14.05	12.69	13.25	13.50	9.25	78.00	1.54
May . .	13.60	12.50	12.75	13.25	14.25	13.17	13.25	13.50	9.47	91.00	1.50
June . .	13.75	12.57	12.70	13.42	14.25	13.08	13.25	13.50	9.50	100.00	1.50
July . .	13.98	12.87	12.72	13.83	14.28	12.83	13.20	13.50	9.61	100.00	1.67
Aug. . .	15.12	13.98	13.71	14.83	14.91	13.83	14.08	13.88	10.77	100.00	1.54
Sept. . .	15.93	14.80	14.50	16.70	15.91	15.43	15.04	14.30	11.22	107.50	1.66
Oct. . .	16.00	15.00	14.58	17.25	16.25	15.75	15.25	15.08	11.71	105.00	2.18
Nov. . .	16.67	15.88	15.82	17.40	16.95	16.73	16.47	17.50	13.14	100.00	2.35
Dec. . .	19.19	17.73	17.98	18.01	18.81	18.02	18.13	18.48	14.00	105.00	2.85
Year . .	14.90	13.78	13.81	14.88	15.25	14.23	14.31	14.47	10.59	91.71	1.79
1916											
Jan. . .	21.00	18.00	18.50	19.24	19.71	18.25	18.80	19.00	14.92	115.40	3.14
Feb. . .	20.50	17.88	18.50	19.50	19.75	18.25	18.80	19.00	14.64	139.00	3.41
Mar. . .	20.67	18.48	18.50	19.60	19.77	18.77	18.86	19.24	15.00	175.00	3.45
April . .	21.00	18.48	18.50	20.50	20.20	19.25	19.00	19.50	15.00	175.00	2.45
May . .	21.00	18.21	18.44	20.50	20.25	19.15	19.08	19.50	15.00	175.00	2.34
June . .	21.00	18.25	18.39	19.90	20.04	18.75	19.30	19.50	14.63	175.00	2.54
July . .	21.00	18.00	18.25	19.15	19.75	18.75	18.80	19.50	14.00	175.00	2.55
Aug. . .	21.00	18.00	18.27	19.00	19.58	18.75	18.57	19.17	14.00	175.00	2.75
Sept. . .	21.32	18.27	18.58	19.50	19.50	19.04	18.67	18.75	14.38	165.00	2.94
Oct. . .	23.81	20.17	20.56	20.52	20.58	20.48	19.87	19.79	15.35	165.00	5.69
Nov. . .	29.40	24.80	25.60	24.68	25.00	27.31	24.58	25.70	19.72	165.00	6.91
Dec. . .	34.84	29.84	29.84	29.84	30.27	33.81	30.48	29.34	23.38	170.00	9.00
Year . .	23.05	19.87	20.16	10.96	21.20	20.67	20.40	20.67	15.84	164.12	3.94

* Contract price, f.o.b. Baltimore;

x Prompt, f.o.b. Connelleville ovens.

that prices were very high. The highest war period average, for pig iron delivered Philadelphia, was \$59.25, in 1864. This is shown in a table in our annual **Metal Statistics**, which gives annual averages of prices from 1799, and there was no preceding year that showed as high an average, while 1903 had shown only \$29.25. War time prices stand in a class by themselves.

The Demand in 1916.

Let us consider the demand in 1916, as to source, by a process of elimination. Pig iron is by no means a convenient basis for any comparison, except of total production. About one-fifth of the pig iron produced goes into castings. No one knows the tonnage of castings as a great but indeterminate quantity of scrap is used, and there are no statistics of the production of different kinds of castings.

The convenient basis is rolled iron and steel, the 1916 output of which we estimate at 32,000,000 gross tons, of which about 1,500,000 tons was wrought iron. The direct exports we estimate at about 5,200,000 tons, and the indirect exports, rolled material consumed by makers, for export, of railway rolling stock, machinery, loaded and unloaded shells, automobiles, agricultural implements, etc., we estimate at 2,800,000 tons, bringing the total rolled material involved in exports direct and indirect up to 8,000,000 tons, or 25% of the production, leaving 24,000,000 tons for strictly domestic consumption. A similar analysis for 1912 and 1913, the two best years before the war, shows 11% for export trade and 22,000,000 tons remaining for domestic.

The intervening period may be averaged at $3\frac{1}{2}$ years, in which domestic

Finished Steel Prices.

(Averaged from daily quotations, f.o.b. Pittsburgh.)

1915	Shapes	Plates.	Bars.	Pipe.	Wire.	Grooved		Sheets				Comp. Fin. steel.
						Wire Nails.	Steel Skelp.	Black.	Galv.	Blue Annld.	Tin plate.	
January	1.10	1.10	1.10	81	1.34	1.54	1.13	1.80	2.80	1.30	3.10	1.4554
February ...	1.10	1.10	1.10	80 $\frac{3}{4}$	1.38	1.58	1.13	1.80	3.09	1.30	3.10	1.4716
March	1.15	1.15	1.15	80	1.40	1.60	1.13	1.80	3.40	1.30	3.15	1.5098
April	1.20	1.20	1.20	80	1.37	1.57	1.13	1.80	3.40	1.33	3.20	1.5357
May	1.20	1.17	1.20	79	1.35	1.55	1.14	1.80	3.60	1.35	3.11	1.5381
June	1.20	1.15	1.20	79	1.35	1.55	1.15	1.75	4.80	1.33	3.10	1.5312
July	1.25	1.22	1.27	79	1.38	1.58	1.18	1.74	4.65	1.32	3.10	1.5692
August	1.30	1.26	1.30	79	1.38	1.61	1.25	1.85	4.40	1.37	3.10	1.6059
September .	1.33	1.33	1.35	79	1.54	1.69	1.28	1.91	3.68	1.51	3.10	1.6506
October	1.44	1.42	1.43	79	1.63	1.78	1.40	2.03	3.57	1.60	3.15	1.7264
November .	1.63	1.63	1.63	78	1.72	1.87	1.56	2.30	4.07	1.90	3.45	1.9089
December ..	1.75	1.75	1.75	78	1.88	2.03	1.70	2.53	4.75	2.26	3.60	2.0329
Year	1.30	1.29	1.31	79 $\frac{1}{4}$	1.48	1.66	1.27	1.94	3.85	1.49	3.19	1.6280
1916												
January	1.87	1.90	1.87	76 $\frac{3}{4}$	1.98	2.13	1.75	2.60	4.75	2.55	3.75	2.1410
February ...	2.06	2.16	2.06	75 $\frac{1}{2}$	2.11	2.26	1.94	2.60	4.80	2.65	3.83	2.2988
March	2.36	2.53	2.36	73 $\frac{3}{4}$	2.25	2.40	2.24	2.73	4.93	2.85	4.20	2.5579
April	2.50	2.75	2.50	71 $\frac{1}{2}$	2.25	2.40	2.35	2.89	5.00	2.95	4.70	2.7166
May	2.50	2.83	2.50	70	2.45	2.50	2.35	2.90	5.00	3.00	5.46	2.8043
June	2.50	2.90	2.50	70	2.45	2.50	2.35	2.90	4.80	3.00	5.75	2.8300
July	2.50	2.90	2.50	70	2.45	2.50	2.35	2.90	4.40	2.90	6.00	2.8425
August	2.54	2.94	2.56	70	2.53	2.58	2.35	2.90	4.20	2.90	5.54	2.8588
September ..	2.60	3.00	2.60	69 $\frac{1}{4}$	2.55	2.60	2.35	2.91	4.20	2.90	5.75	2.9013
October	2.63	3.07	2.62	69	2.59	2.64	2.40	3.23	4.50	3.15	5.77	2.9747
November .	2.86	3.33	2.76	68 $\frac{1}{2}$	2.79	2.84	2.75	3.72	5.34	3.66	6.40	3.2036
December ..	3.03	3.53	2.93	66	2.95	3.00	2.85	4.40	6.27	3.65	7.18	3.4679
Year	2.50	2.82	2.48	70 $\frac{7}{8}$	2.45	2.53	2.34	3.06	4.85	2.99	5.34	2.9009

consumption increased a trifle less than 10%, nothing at all for such a period.

We can eliminate farther. Reports of the Bridge Builders' and Structural Society show that in 1915 fabricated steel contracts placed represented 72% of the fabricating capacity, while in 1916 the proportion was about 70%. In 1912 and 1913 it may be assumed the fabricating capacity was quite fully engaged. There must have been a decrease of nearly one-third in fabricated steel tonnage.

The exhaustive statistics of the Railway Age Gazette, presented elsewhere in this issue, of railway building and car and locomotive building, indicate that the steel consumed in 1916 in railway building and in building rolling stock for railways in the United States, was not more than two-thirds the tonnage similarly consumed in 1912 and 1913.

Thus we have it that while domestic consumption as a whole increased from 22,000,000 to 24,000,000 tons, there was a decrease amounting to something like 3,000,000 tons in steel going into what one naturally considers "permanent investment". In other lines of consumption there was, then a very large increase. These other lines represent quite largely the common everyday needs of the people, steel bought more or less directly by farmers and others.

This is precisely what we want to know. It has been suggested frequently that investors were indisposed to put their money into permanent investments when costs were high, preferring to wait, as their return must come over a period of say 15 to 25 years, and it would not pay to build at war costs to secure the earnings of peace times.

On the other hand we find that the ordinary everyday needs of the people have greatly expanded, and these demands we cannot consider as being purely war time requirements. The use of steel has expanded, through various new developments, and there seems to be reasonable assurance that given ordinarily prosperous times this increased use of steel will continue, while there is ground for expecting a heavy investment demand for steel when prices have been adjusted to the views of investors.

Prospects for 1917.

The further duration of the war is less of a factor than ever before in steel trade prospects. The market quieted down very suddenly in December and the common view seems to be that the quieting down occurred by reason of the German peace overture of December 12th. One wishes it were possible to know what would have occurred if Germany had not taken that action. It is quite certain that in the earlier days of December there were some signs of a quieting down. The feverish activity of several months preceding, culminating in the heavy buying of November, whereby for only the third time in its history the Steel Corporation showed an increase of a million tons in unfilled obligations during a month, could not have continued indefinitely in any event. Steel trade history is utterly worthless if it does not teach that the market must quiet down for the holidays and inventory taking, and that more often than not a buying movement that is on its last lap will be stopped by the holidays, not to be resumed unless there is a fresh and greater accretion of strength in fundamental conditions.

Can the war further increase the demand for steel? No! The idea so commonly expressed a few months ago that should domestic demand fall off on account of high prices, foreign buyers would rush in and absorb the surplus released must be dismissed. The plain fact is that shipping facilities have been decreasing on account of submarine activity. Irrespective of what foreign markets may desire, it will be physically impossible to export more steel in 1917 than was exported in 1916. The amount of vessel tonnage available to the ordinary buyer and seller has been decreasing rapidly by reason of the growing requisitions of the British Admiralty, which at the same time is disposed to divert more of the orders to Canada. That country will probably call upon us for more raw material than formerly, but the total to be moved across the Atlantic will not increase.

The total domestic demand for steel during the two years, 1917 and 1918, will be greater the sooner the war ends.

With a continuance of the war for two years the United States would experience an economic crisis long before the period ended. The present steel market could not be maintained for that length of time and any attempt to readjust it, with the war still in progress, would be a slow and unsatisfactory job. No one, buyer or seller, would know what to do. Given an end of the war, everyone will address himself to the task of finding the new basis with the greatest ardor. To business enthusiasm would be added the thrill of a lifetime that the dreadful, the once unthinkable thing was over. Of course there will be a great readjustment. We do not know, and we do not care greatly, whether it will come suddenly or gradually. What anybody can readily see is

that it will be perfectly natural for the thing to occur in the way that is best fitted to conserve business and build for the future.

All the records of the years during and after the Civil War and the Franco-Prussian war show that there was good business for years afterwards in the countries that had been at war and in the neutral countries.

The orders now on the books of steel companies are chiefly for steel for the common everyday requirements of the people of the United States. When the war ends will those orders be canceled, assuming that they could be? Other orders are for car and shipbuilding material. There would be no reason why they should be canceled if they could.

U. S. Steel Corporation's Operations.

Earnings and Unfilled Orders.

Earnings by Quarters.

Net earnings by quarters since 1911:

Quarter.	1916.	1915.	1914.
1st	\$60,713,624	\$12,457,809	\$17,994,382
2nd	81,126,048	27,950,055	20,457,596
3rd	85,817,067	38,710,644	22,276,002
4th		51,277,504	10,935,635
Year	130,396,012	71,663,615	
	1913.	1912.	1911.
1st	\$34,426,802	\$17,826,973	\$23,519,203
2nd	41,219,813	25,102,266	28,108,620
3rd	38,450,400	30,063,512	29,522,725
4th	23,084,330	35,181,922	23,155,018
Year ...	137,181,345	108,174,673	104,305,466

Unfilled Orders.

(At end of the Quarter.)

	First.	Second.	Third.	Fourth.
1904..	4,136,961	3,192,277	3,027,436	4,696,203
1905..	5,579,560	4,829,655	5,865,833	7,605,086
1906..	7,018,712	6,809,584	7,936,884	4,489,718
1907..	8,043,858	7,603,878	6,425,008	4,642,553
1908..	3,765,343	3,313,876	3,421,977	3,603,527
1909..	3,542,590	4,057,939	4,796,833	5,927,031
1910..	5,402,514	4,237,794	3,158,106	2,674,757
1911..	3,447,301	3,361,058	3,611,317	5,084,761
1912..	5,304,841	5,807,346	6,551,507	7,932,164
1913..	7,468,956	5,807,317	5,003,785	4,282,108
1914..	4,653,825	4,032,857	3,787,667	3,836,643
1915..	4,255,749	4,678,196	5,317,608	7,805,220
1916..	9,331,001	9,640,458	9,522,584	

Bookings and Shipments.

In this table, first two columns, percentages of bookings and shipments to total capacity, our own estimates, while last column is derived from official reports of "unfilled tonnage" while third percentage column is directly computed from this tonnage column.

	Ship-ments.	Book-ings.	Dif-ference.	Dif-ference.
	%	%	%	Tons.
1915—				
January ..	44	81	+37	+411,928
February ..	57	66	+ 9	+ 96,800
March	67	60	— 7	— 89,622
April	71	63	— 8	— 93,505
May	76	85	+ 9	+102,354
June	79	113	+34	+413,598
July	83	104	+21	+250,344
August	91	89	— 2	— 20,085
September .	98	133	+35	+409,163
October ...	103	172	+69	+847,834
November .	102	186	+84	+1,024,037
December .	102	152	+50	+615,731
1916—				
January ...	102	112	+10	+116,547
February ..	102	157	+55	+646,199
March	104	164	+60	+762,035
April	104	146	+42	+498,550
May	104	82	—22	—297,340
June	104	82	—22	—297,340
July	90	86	— 4	— 46,866
September .	96	87	— 9	—137,773
October ...	106	145	+39	+492,676
November .	104	189	+85	+1,043,282

If, as the months pass, the war does not end, the volume of tonnage on books will decrease, and the readjustment will then come in a shorter time after the war does end. There used to be a great deal said about the readjustments in costs that would have to be effected

after the war. The great readjustment will be largely on paper and can be effected quickly. The talk about inefficiency of labor and all that sort of thing has been overdone. Steel prices will be able to find their level quickly when the time comes.

Lake Superior Iron Ore.

Shipments of iron ore down the lakes have been as follows, in gross tons:

	1911.	1912.	1913.	1914.	1915.	1916.
April	331,645	204,042	866,386	269,686	503,832	1,658,411
May	3,684,819	5,919,074	7,284,212	3,852,063	5,012,359	8,449,580
June	4,819,996	7,567,555	7,974,444	5,502,367	6,005,591	9,507,576
July	5,221,373	7,600,233	8,204,416	5,784,514	7,204,021	9,750,157
August	5,548,311	7,760,248	7,677,801	5,869,477	8,081,117	9,850,140
September	5,231,069	7,287,230	7,258,413	5,438,049	7,863,146	9,600,786
October	4,769,965	7,010,219	6,526,103	4,242,392	7,146,873	9,116,196
November	2,523,253	4,072,674	3,270,958	1,068,682	4,445,129	5,715,452
December		14,579	18,545	1,411	57,236	1,085,900
Season Lake ..	32,130,411	47,435,777	49,070,478	32,021,987	46,318,804	64,734,198

* Estimated.

Car Buying.

Freight cars ordered:

First half 1913	114,000	
Second half	33,000	
Year 1913		147,000
First half 1914	66,000	
Second half	14,000	
Year 1914		80,000
First half 1915	61,916	
Second half	69,217	
Year 1915		131,133
1916—		
January	21,337	
February	13,043	
March	10,725	
April	8,058	
May	6,204	
June	3,470	
Six months		64,287
July	1,883	
August	3,384	
September	15,683	
October	32,403	
November	29,283	
December	20,000	
Six months		102,636

Pig Iron Production.

Rates per annum, including charcoal pig.

April, 1915	26,000,000
May	26,800,000
June	29,250,000
July	30,300,000
August	31,800,000
September	35,000,000
October	37,100,000
November	37,350,000
December	38,000,000
January, 1916	37,850,000
February	39,200,000
March	39,600,000
April	39,600,000
May	39,800,000
June	39,500,000
July	38,350,000
August	39,200,000
October	41,700,000
November	40,700,000
December	37,700,000
On January 1st	37,000,000

Actual production:

1910	27,300,567
1913	30,966,132
1914	23,332,244
1915	29,916,213

Composite Steel.

Computation for January 1, 1917:

Pounds.	Group.	Price	Extension.
2½	Bars	3.00	7.500
1½	Plates	3.60	5.400
1½	Shapes	3.10	4.650
1½	Pipe (¾-3)	3.55	5.325
1½	Wire nails	3.00	4.500
1	Sheets (28 bl.)	4.50	4.500
½	Tin plates	7.50	3.750
10 pounds			35.625
One pound			3.5625

Averaged from daily quotations:

	1912.	1913.	1914.	1915.	1916.
Jan.	1.5123	1.7737	1.5394	1.4554	2.1410
Feb.	1.4878	1.7625	1.5794	1.4716	2.2988
Mar.	1.4790	1.7646	1.5638	1.5098	2.5579
April	1.5206	1.7742	1.5337	1.5357	2.7165
May	1.5590	1.7786	1.5078	1.5381	2.8043
June	1.5794	1.7719	1.4750	1.5312	2.8300
July	1.6188	1.7600	1.4805	1.5692	2.8425
Aug.	1.6784	1.7400	1.5241	1.6059	2.8588
Sept.	1.7086	1.7093	1.5632	1.6506	2.9013
Oct.	1.7588	1.6779	1.5236	1.7264	2.9747
Nov.	1.7750	1.6203	1.4769	1.9089	3.2036
Dec.	1.7789	1.558	1.4324	2.0329	3.4679
Year	1.6214	1.7241	1.5182	1.6280	2.8009

Scrap Iron and Steel Prices.

Melting Steel. Bundled No. 1 R. R. No. 1 No. 1 Heavy Steel. Sheet Wrought Cast. Steel. Melt'g. Pitts. Pitts. Pitts. Pitts. Phila. Ch'go.

1915—						
Jan.	11.40	9.20	10.75	11.25	10.30	9.00
Feb.	11.70	9.25	10.75	11.25	10.70	9.20
Mar.	11.80	9.37	10.75	11.50	10.85	9.25
Apr.	11.65	9.37	10.75	11.85	11.10	9.13
May	11.65	9.37	10.75	11.85	11.25	9.50
June	11.75	9.37	10.75	11.85	11.25	9.75
July	12.62	9.60	11.00	12.00	11.85	10.90
Aug.	14.05	11.40	12.25	12.85	13.70	11.85
Sep.	14.25	11.90	13.15	13.10	14.70	12.15
Oct.	14.50	12.00	13.75	13.35	14.50	12.00
Nov.	16.12	12.55	15.35	13.90	14.65	13.95
Dec.	17.65	13.15	17.10	14.95	15.60	15.25
Year	13.25	10.54	12.26	12.40	12.54	10.90

1916—						
Jan.	17.75	13.40	18.00	15.10	16.30	15.60
Feb.	17.20	13.60	18.75	15.35	16.25	15.75
Mar.	18.40	14.80	19.15	15.75	17.15	16.75
Apr.	18.00	14.75	19.25	16.00	18.00	16.75
May	17.00	13.65	19.65	16.10	17.00	15.90
June	16.25	13.00	19.00	15.40	15.45	14.80
July	16.70	12.50	18.80	15.30	15.00	14.30
Aug.	16.25	11.70	18.15	15.00	15.00	15.30
Sep.	16.61	11.65	18.35	15.00	15.00	16.00
Oct.	18.25	11.65	19.30	15.80	15.65	17.35
Nov.	21.50	13.75	21.25	17.75	18.25	21.00
Dec.	25.50	16.00	27.20	21.40	23.95	23.65
Year	18.37	13.38	19.73	16.16	16.92	16.90

Composite Pig Iron.

Computation for January 1, 1917:

One ton Bessemer, valley	\$35.00
Two tons basic, valley (30.00)	60.00
One ton No. 2 foundry, valley	30.00
One ton, No. 2 foundry, Philadelphia	30.75
One ton No. 2 foundry, Buffalo	35.25
One ton No. 2 foundry, Cleveland	30.95
One ton No. 2 foundry, Chicago	30.50
Two tons No. 2 Southern, Foundry	
Cincinnati (27.90)	55.80
Total, ten tons	308.25
One ton	30.825

Averaged from daily quotations:

	1912.	1913.	1914.	1915.	1916.
Jan.	13.240	17.391	13.492	13.070	18.690
Feb.	13.427	17.140	13.721	13.079	18.564
Mar.	13.581	16.775	13.843	12.971	18.857
April	13.779	16.363	13.850	12.914	19.021
May	13.917	15.682	13.808	13.206	18.965
June	14.005	14.968	13.606	13.047	18.552
July	14.288	14.578	13.520	13.125	18.585
Aug.	14.669	14.565	13.516	14.082	18.514
Sept.	15.386	14.692	13.503	14.895	18.697
Oct.	16.706	14.737	13.267	15.213	20.192
Nov.	17.226	14.282	13.047	16.398	25.243
Dec.	17.475	13.838	13.073	17.987	30.082
Year	14.823	15.418	13.520	14.150	20.306

Unfinished Steel and Iron Bars.

(Averaged from daily quotations.)

Billets. Sheet Bars. Rods. —Iron bars, deliv.—
Pitts. Pitts. Pitts. Phila. Pitts. Ch'go.

1915—						
Mar.	19.30	19.80	25.00	1.13	1.20	1.10
Apr.	19.50	20.00	25.00	1.18	1.20	1.14
May	19.50	20.00	25.00	1.18	1.20	1.15
June	20.00†	20.50†	25.00	1.20	1.20	1.17
July	21.40†	21.90†	25.75	1.32	1.20	1.20
Aug.	23.50†	24.00†	27.00	1.43	1.25	1.22
Sep.	26.50†	26.00†	29.75	1.49	1.36	1.30
Oct.	26.00†	26.00†	31.50	1.57	1.45	1.38
Nov.	26.20†	26.50†	36.00	1.72	1.54	1.51
Dec.	30.73†	30.73†	39.50	1.99	1.83	1.69
Year	13.26	10.54	12.26	12.40	12.54	10.90

1916—						
Jan.	32.50†	32.50†	42.00	2.24	2.02	1.79
Feb.	34.00†	34.00†	48.00	2.41	2.25	1.92
Mar.	41.00†	41.00†	56.00	2.56	2.40	2.17
Apr.	45.00	45.00	60.00	2.62	2.50	2.35
May	43.00	43.00	59.00	2.66	2.60	2.35
June	42.00†	42.00†	58.00	2.66	2.60	2.35
July	42.50†	42.50†	58.00	2.66	2.60	2.35
Aug.	46.00	46.00	58.00	2.66	2.60	2.35
Sep.	47.00	45.00	58.00	2.66	2.70	2.35
Oct.	48.00	48.00	59.00	2.66	2.75	2.35
Nov.	52.75	54.00	65.00	2.66	2.85	2.50
Dec.	56.96	56.96	70.00	3.02	3.19	2.89
Year	44.23	44.17	57.58	2.57	2.59	2.31

† Premium for open-hearth.

Price Changes of Iron and Steel Products From October 15, 1915 to Date.

Price changes in merchant bars, structural shapes, plates, wire nails, merchant pipe, sheets and tin plates are given below, with dates. These are the commodities used in compiling our composite finished steel. In some cases the dates named are those upon which prominent producers announced price changes, but more frequently the rates are merely those upon which our quotations were changed. A few other price changes are included.

1915—				1915—			
Oct. 15	Shapes	1.40	to 1.45	Jan. 12	Blue ann. sheets	2.40	to 2.50
" 15	Galvanized sheets	3.60	to 3.50	" 14	Boiler tubes	66%	to 64%
" 19	Black sheets	2.00	to 2.10	" 19	Blue ann. sheets	2.50	to 2.65
" 21	Wire nails	1.75	to 1.85	" 21	Bars	1.85	to 1.90
" 25	Blue ann. sheets	1.60	to 1.65	" 21	Plates	1.85	to 2.00
" 26	Bars	1.45	to 1.50	" 21	Shapes	1.85	to 1.90
" 26	Plates	1.45	to 1.50	" 21	Pipe	77%	to 76%
" 26	Shapes	1.45	to 1.50	" 24	Wire nails	2.10	to 2.20
" 28	Blue ann. sheets	1.65	to 1.70	Feb. 7	Bars	1.90	to 2.00
" 29	Boiler tubes	71%	to 69%	" 7	Plates	2.00	to 2.10
Nov. 1	Steel pipe	79%	to 78%	" 7	Shapes	1.90	to 2.00
" 1	Galvanized sheets	3.50	to 3.60	" 14	Wire nails	2.20	to 2.30
" 4	Black sheets	2.10	to 2.20	" 15	Pipe	76%	to 75%
" 4	Galvanized sheets	3.60	to 3.70	" 21	Bars	2.00	to 2.25
" 4	Bars	1.50	to 1.60	" 21	Plates	2.10	to 2.35
" 12	Tin plate	3.30	to 3.60	" 21	Shapes	2.00	to 2.25
" 12	Sheets	2.20	to 2.25	" 21	Tin plate	3.75	to 4.00
" 15	Sheets	2.25	to 2.40	" 29	Pipe	75%	to 74%
" 15	Galvanized sheets	3.80	to 4.00	" 29	Boiler tubes	64%	to 63%
" 15	Blue ann. sheets	1.80	to 2.00	Mar. 1	Wire nails	2.30	to 2.40
" 16	Wire nails	1.85	to 1.90	" 8	Black sheets	2.60	to 2.75
" 18	Bars	1.60	to 1.70	" 8	Blue ann. sheets	2.65	to 2.90
" 18	Plates	1.60	to 1.70	" 13	Bars	2.25	to 2.35
" 18	Shapes	1.60	to 1.70	" 13	Plates	2.35	to 2.60
" 18	Galvanized sheets	4.00	to 4.25	" 13	Shapes	2.25	to 2.35
" 24	Galvanized sheets	4.25	to 4.50	" 15	Steel pipe	74%	to 73%
" 30	Sheets	2.40	to 2.50	" 15	Boiler tubes	63%	to 61%
" 30	Galvanized sheets	4.50	to 4.75	" 23	Bars	2.35	to 2.50
" 30	Blue ann. sheets	2.00	to 2.25	" 23	Shapes	2.35	to 2.50
Dec. 1	Wire nails	1.90	to 2.00	" 28	Plates	2.60	to 2.75
" 1	Boiler tubes	69%	to 68%	" 29	Sheets	2.75	to 2.85
" 15	Bars	1.70	to 1.80	" 29	Steel pipe	73%	to 72%
" 15	Plates	1.70	to 1.80	" 29	Boiler tubes	61%	to 60%
" 15	Shapes	1.70	to 1.80	April 5	Sheets	2.85	to 2.90
" 21	Wire nails	2.00	to 2.10	" 15	Boiler tubes	60%	to 56%
Dec. 22	Sheets	2.50	to 2.60	" 19	Tin plate	4.50	to 5.00
1916—				" 24	Pipe	72%	to 70%
Jan. 3	Tin plate	3.60	to 3.75	May 1	Wire nails	2.40	to 2.50
" 3	Blue ann. sheets	2.25	to 2.35	" 3	Tin plates	5.00	to 5.50
" 4	Bars	1.80	to 1.85	" 16	Plates	2.75	to 2.90
" 4	Plates	1.80	to 1.85	June 7	Galv. sheets	5.00	to 4.75
" 4	Shapes	1.80	to 1.85	" 16	Tin plate	5.50	to 6.00
" 4	Pipe (with extra			July 7	Blue ann. sheets	3.00	to 2.90
	2 1/2%)	78%	to 77%	" 7	Galv. sheets	4.75	to 4.50
" 5	Blue ann. sheets	2.35	to 2.40	Aug. 1	Tin plate	6.00	to 5.50
" 7	Boiler tubes	68%	to 66%	" 7	Wire nails	2.50	to 2.60

Aug. 15	Bars	2.50	to 2.60
" 18	Shapes	2.50	to 2.60
" 18	Plates	2.90	to 3.00
" 25	Galv. sheets	4.25	to 4.15
Sept. 7	Pipe	70%	to 69%
" 7	Boiler tubes	56%	to 54%
" 20	Galv. sheets	4.15	to 4.25
" 28	Sheets	2.90	to 3.00
Oct. 3	Blue ann. sheets	2.90	to 3.00
" 3	Galv. sheets	4.25	to 4.30
" 6	Sheets	3.00	to 3.10
" 7	Tin plate	5.50	to 6.00
" 13	Sheets	3.10	to 3.25
" 13	Galv. sheets	4.30	to 4.40
" 13	Tin plate	6.00	to 5.75
" 16	Galv. sheets	4.40	to 4.50
" 19	Wire nails	2.60	to 2.70
" 20	Sheets	3.25	to 3.35
" 20	Blue ann. sheets	3.00	to 3.15
" 24	Plates	3.00	to 3.25
" 25	Bars	2.60	to 2.70
" 25	Shapes	2.60	to 2.70
" 25	Grooved skelp	2.35	to 2.50
" 26	Sheets	3.35	to 3.40
" 26	Galv. sheets	4.50	to 4.75
" 27	Blue ann. sheets	3.15	to 3.30
" 30	Tin plate	5.75	to 6.00
" 31	Shapes	2.70	to 2.80
Nov. 1	Boiler tubes	54%	to 52%
" 6	Wire nails	2.70	to 2.85
" 8	Sheets	3.40	to 3.65
" 15	Tin plate	6.00	to 6.25
" 15	Grooved skelp	2.50	to 2.60
" 15	Pipe	69%	to 68%
" 18	Galv. sheets	5.00	to 5.50
" 20	Tin plate	6.25	to 7.00
" 20	Sheets	3.65	to 4.00
" 21	Bars	2.70	to 2.90
" 21	Plates	3.25	to 3.50
" 21	Shapes	2.80	to 3.00
" 21	Blue ann. sheets	3.30	to 3.40
" 21	Boiler tubes	52%	to 46%
" 25	Grooved skelp	2.60	to 2.85
" 27	Blue ann. sheets	3.40	to 3.50
" 27	Galv. sheets	5.50	to 5.75
" 27	Wire nails	2.85	to 3.00
Dec. 4	Pipe	68%	to 66%
" 4	Sheets	4.00	to 4.25
" 5	Galv. sheets	5.75	to 6.00
" 6	Blue ann. sheets	3.50	to 3.65
" 11	Sheets	4.25	to 4.50
" 11	Galv. sheets	6.00	to 6.25
" 20	Tin plate	7.00	to 7.50
" 21	Bars	2.90	to 3.00
" 21	Shapes	3.00	to 3.10
" 21	Plates	3.50	to 3.60
" 26	Blue ann. sheets	3.75	to 4.00
" 30	Pipe	66%	to 64%

Steel Making Pig Iron Averages.

Bessemer and basic pig iron averages, compiled by W. P. Snyder & Company from sales in the valley market of 1,000 tons and over.

	Bessemer.		Basic.	
	1915.	1916.	1915.	1916.
Jan. ..	\$13.6375	\$20.645	\$12.50	\$17.833
Feb. ..	13.60	20.2136	12.50	17.984
Mar. ..	13.60	20.8625	12.50	18.25
April .	13.60	20.70	12.50	18.00
May ..	13.659	20.833	12.65	18.1607
June ..	13.75	21.00	12.724	18.00
July ..	13.991	21.00	12.959	18.00
Aug. ..	15.064	21.00	14.364	18.00
Sept. ..	15.906	21.9346	15.00	18.63
Oct. ..	16.00	23.6576	15.0147	20.3086
Nov. ..	16.615	29.12	15.518	27.229
Dec. ..	19.021	34.213	17.487	30.00
Year .	14.870	22.9316	13.810	20.0329

Above prices are f. o. b. valley furnace; delivered Pittsburgh is 95 cents higher.

British Iron And Steel Exports.

	Pig Iron.	Rails.	Tin Plate.	Total.*
1912 ..	1,262,383	407,175	481,123	4,933,112
1913 ..	1,124,181	500,117	494,497	5,049,090
1914 ..	780,763	433,507	435,392	3,972,348
1915 ..	611,617	242,289	368,602	3,250,299
1915—				
April ..	35,209	21,602	40,135	265,244
May ..	29,342	21,776	33,727	267,524
June ..	39,127	23,728	33,986	272,195
July ..	78,370	33,224	39,528	351,984
Aug. ..	73,283	32,962	22,572	295,260
Sept. ..	53,068	15,800	20,002	249,501
Oct. ..	78,973	13,640	31,968	312,141
Nov. ..	86,109	12,760	25,556	308,319
Dec. ..	74,892	9,937	30,641	259,782
Year ..	611,617	242,289	368,602	3,250,299
1916—				
Jan. ..	78,271	3,151	26,271	292,203
Feb. ..	84,351	3,905	27,289	283,250
Mar. ..	87,283	3,366	39,482	307,488
April ..	82,976	10,510	23,337	293,897
May ..	97,967	4,103	41,868	395,750
June ..	77,487	3,243	30,351	310,595
July ..	69,999	3,485	38,174	298,929
Aug. ..	95,655	1,983	34,124	319,928
Sept. ..	72,683	2,712	19,226	231,335
Oct. ..	72,187	6,929	10,929	241,261
Nov. ..	49,986	16,411	4,571	224,554
11 mos..	868,854	47,958	307,462	3,199,220

* Includes scrap, pig iron, rolled iron and steel, cast and wrought iron manufactures, bolts, nuts, etc., but not finished machinery, boilers, tools, etc.

Tin Plate Movement.

United States imports and exports of tin plate in gross tons have been as follows, the imports of course including those for drawback purposes.

	Imports.	Exports.
1906	56,983	12,082
1907	57,773	10,293
1908	58,490	11,878
1909	62,592	9,327
1910	66,640	12,459
1911	14,098	61,466
1912	2,053	81,694
1913	20,680	57,812
1914	15,411	59,549
1915	2,350	154,541
January, 1915	1,608	7,014
February	265	5,834
March	53	10,500
April	44	9,084
May	24	7,218
June	75	7,582
July	71	13,895
August	50	21,939
September	31	22,271
October	15	17,018
November	54	15,538
December	62	16,792
January, 1916	62	12,178
February	107	13,534
March	44	20,364
April	179	21,385
May	39	25,585
June	91	29,751
July	150	18,760
August	105	18,757
September	51	18,770
October	111	14,195
Ten months	936	193,322

Coke Production in the U. S.

(Short Tons.)

	Bee-hive.	By-product.	Total.
1893	9,494,730	12,850	9,477,580
1900	19,457,621	1,075,727	20,533,348
1910	34,570,076	7,138,734	41,708,810
1911	27,703,644	7,847,845	35,551,489
1912	32,868,435	11,115,164	43,983,599
1913	33,584,830	12,714,700	46,299,530
1914	23,335,071	11,210,943	34,555,914
1915	27,508,255	14,072,895	41,581,150
1916	35,100,000	19,200,000	54,300,000

* Estimated.

Wage Scale Averages.

Sworn averages of prices obtained by mills for shipments in months named, used in fixing wages under Amalgamated Association sliding scales. The figures represent the rates used, the actual ascertained averages lying between the figure given and the one five points higher. Base sizes of iron bars; average of 26, 27 and 28 gauges black sheets; tin plate per base box, 100-pound.

Bar Iron.

	1914.	1915.	1916.
January-February	1.1590	1.024	1.40
March-April	1.176	1.087	1.60
May-June	1.1257	1.10	1.85
July-August	1.0928	1.15	1.95
September-October	1.0847	1.15	2.00
November-Dec'ber	1.037	1.30	....
Year's average	1.1125	1.144	....

Sheets and Tin Plates.

1916.	Sheets.	Tin Plates.
January-February	2.25	3.50
March-April	2.50	3.70
May-June	2.60	3.90
July-August	2.70	4.05
September-October	2.75	4.10

Fluctuations in Can Prices.

Schedule of changes in can prices of the American Can Company is given below:

Published date.	1's	2's	3's	10's
December 1, 1901	\$11.00	\$15.00	\$20.00	\$45.00
March 5, 1903 ...	11.50	16.00	21.50	47.50
January 5, 1904..	11.00	14.50	19.50	45.00
October 27, 1904.	10.00	13.00	17.00	42.50
November 16, 1905	9.50	12.50	17.00	42.50
November 30, 1905	9.50	12.50	16.50	40.00
December 7, 1905.	9.50	12.00	16.00	40.00
March 1, 1906 ...	9.50	12.50	16.50	40.00
January 2, 1907..	10.50	13.50	17.70	43.00
February 28, 1907	10.30	13.90	18.40	44.50
July 4, 1907	10.30	14.25	19.00	46.00
January 8, 1908..	9.75	13.25	17.75	42.00
June 1, 1908	10.20	14.00	18.40	45.00
February 2, 1909.	10.00	13.75	18.25	44.00
March 10, 1909 ..	9.50	13.00	17.00	41.75
April 9, 1909	9.50	12.00	16.00	40.00
December 8, 1909.	8.75	11.50	15.50	40.00
December 27, 1910	9.25	12.50	16.75	42.00
December 7, 1911.	9.00	12.00	16.25	42.00
* January 6, 1913..	9.50	12.75	17.25	44.00
* January 5, 1914..	9.25	12.25	17.00	43.50
* January 4, 1915..	9.00	11.75	16.50	42.00
* January 3, 1916..	9.50	12.75	18.00	45.00
* January 2, 1917..	15.75	22.25	31.25	71.00

* Season's prices.

Iron and Steel Imports and Exports.

Value of Tonnage and Non-Tonnage.

	1911.	1912.	1913.	1914.	1915.	1916.
January	\$18,738,391	\$18,451,914	\$25,141,409	\$16,706,836	\$18,053,421	\$51,643,807
February	18,690,792	21,801,570	24,089,871	16,520,260	16,470,751	54,155,386
March	22,591,991	24,474,799	27,221,210	20,551,137	20,985,505	58,300,297
April	24,916,912	26,789,853	27,123,044	20,639,569	25,302,649	58,722,411
May	20,616,795	28,050,247	26,718,970	19,734,045	26,536,612	72,918,913
June	20,310,053	24,795,802	25,228,346	18,927,958	31,730,132	76,257,884
July	17,454,772	24,917,952	24,170,704	16,737,552	35,892,106	70,745,162
August	20,013,557	25,450,107	23,947,440	10,428,817	37,726,657	86,296,703
September ...	19,875,308	23,286,040	22,831,082	12,531,102	38,522,175	90,895,592
October	20,220,833	25,271,559	25,193,887	16,455,832	43,299,457	82,010,972
November ...	20,823,061	26,406,425	20,142,141	15,689,401	48,056,220	.....
December ...	22,186,996	23,750,864	22,115,701	14,939,613	45,825,277	.....
Totals ...	\$249,656,411	\$289,128,420	\$293,934,160	\$199,861,684	\$388,703,720	\$701,052,410

Exports of Tonnage Lines,---Gross Tons.

	1909.	1910.	1911.	1912.	1913.	1914.	1915.	1916.
January	70,109	118,681	152,262	151,575	249,493	118,770	140,550	357,122
February	84,837	110,224	150,919	204,969	241,888	121,206	139,946	368,867
March	94,519	124,980	216,360	218,219	257,519	159,998	174,104	438,058
April	100,911	117,921	228,149	267,313	259,689	161,952	223,587	384,924
May	109,808	135,306	178,589	307,656	242,353	139,107	263,113	540,549
June	114,724	120,601	174,247	273,188	243,108	144,539	356,431	526,772
July	100,850	127,578	162,555	272,778	237,159	114,790	380,336	503,685
August	105,090	131,391	177,902	282,645	209,856	86,599	405,952	597,750
September	97,641	119,155	181,150	248,613	213,037	96,476	382,118	643,767
October	110,821	129,828	186,457	251,411	220,550	147,293	349,848	610,125
November	116,103	155,138	187,554	233,342	175,961	140,731	362,766	.....
December	137,806	150,102	190,854	235,959	181,715	117,827	333,840	.....
Totals	1,243,567	1,540,895	2,187,724	2,948,466	2,730,681	1,549,543	3,532,432	4,971,619

Iron Ore Imports.

	1913.	1914.	1915.	1916.
Jan. .	175,463	101,804	75,286	89,844
Feb. .	188,734	112,574	78,773	93,315
Mar. .	164,865	68,549	88,402	93,383
April.	174,162	111,812	91,561	75,712
May .	191,860	125,659	98,974	148,599
June .	241,069	188,647	118,575	134,154
July .	272,017	141,838	119,468	156,755
Aug. .	213,139	134,913	126,806	127,094
Sept. .	295,424	109,176	173,253	109,747
Oct. .	274,418	114,341	138,318	95,833
Nov. .	179,727	90,222	113,544	.....
Dec. .	223,892	51,053	118,321	.....

Totals 2,594,770 1,350,588 1,341,281 1,125,437

Iron and Steel Imports.

	1912.	1913.	1914.	1915.	1916.
Jan. .	20,008	21,740	17,776	10,568	15,824
Feb. .	11,622	25,505	14,757	7,506	20,280
Mar. .	15,466	27,467	27,829	8,025	15,162
April.	12,481	25,742	30,585	16,565	20,175
May .	15,949	28,728	28,173	28,916	32,113
June .	21,407	36,597	23,076	32,200	26,886
July .	17,882	36,694	25,282	20,858	14,774
Aug. .	20,571	18,740	28,768	27,557	32,257
Sept..	18,740	19,941	38,420	23,344	25,558
Oct. .	25,559	20,840	22,754	34,319	30,170
Nov. .	24,154	25,809	24,165	37,131	.....
Dec. .	21,231	26,454	9,493	35,455	.....

Total 235,072 317,260 280,778 282,442 233,199

Comparison of Metal Prices.

	Range for 1914.		Range for 1915		Range for 1916.		Closing, Dec. 30, 1916.
	High.	Low.	High.	Low.	High.	Low.	
Pig Iron.							
Bessemer, valley	14.25	13.75	21.00	13.60	35.00	20.00	35.00
Basic, valley	13.25	12.50	18.00	12.50	30.00	17.75	30.00
No. 2 foundry, valley	13.25	12.75	18.50	12.50	30.00	18.25	30.00
No. 2X foundry, Philadelp.	15.00	14.20	19.50	14.00	30.75	19.50	30.75
No. 2 foundry, Cleveland ..	14.25	13.25	18.80	13.00	30.95	18.50	30.95
No. 2X foundry, Buffalo.	13.75	12.25	18.00	11.75	35.00	18.00	35.00
No. 2 foundry, Chicago ..	14.75	13.00	18.50	13.00	30.00	18.00	30.00
No. 2 South'n Birmingham	10.75	9.50	14.50	9.25	25.00	14.00	25.00
Scrap Iron and Steel.							
Melting Steel, Pittsburgh.	12.00	9.75	18.00	11.00	27.00	16.00	27.00
Heavy melt. steel, Chicago	11.00	8.00	15.25	8.75	24.00	14.50	24.00
No. 1 R. R. wrought, Pitts.	12.75	10.00	17.25	10.75	29.00	17.50	25.00
No. 1 cast, Pittsburgh	12.25	10.50	15.00	11.00	23.50	14.75	22.50
Heavy steel scrap, Phila. ..	11.25	9.00	16.25	9.50	24.50	14.75	23.50
Iron and Steel Products.							
Bessemer rails, mill	1.25	1.25	28.00	28.00	38.00	28.00	38.00
Iron bars, Pittsburgh	1.35	1.20	1.90	1.20	3.25	1.90	3.25
Iron bars, Philadelphia ...	1.27½	1.12½	2.06	1.12½	3.16	2.06	3.16
Steel bars, Pittsburgh	1.20	1.05	1.80	1.10	3.00	1.85	3.00
Tank plates, Pittsburgh ..	1.20	1.05	1.60	1.10	3.60	1.85	3.60
Structural shapes, Pitts. ..	1.25	1.05	1.80	1.10	3.10	1.85	3.10
Grooved steel skelp, Pitts..	1.20	1.12½	1.75	1.12½	2.85	1.75	2.85
Black sheets, Pittsburgh..	1.95	1.80	2.60	1.70	4.50	2.60	4.50
Galv. sheets, Pittsburgh ..	3.00	2.75	5.00	2.65	6.50	4.15	6.25
Tin plate, Pittsburgh	3.75	3.10	3.60	3.10	7.50	3.75	7.50
Wire nails, Pittsburgh	1.60	1.50	2.10	1.50	3.00	2.10	3.00
Steel pipe, Pittsburgh	79½%	81%	79%	81%	64%	78%	64%
Connellsville Coke at ovens.							
Prompt furnace	2.00	1.60	3.50	1.50	12.00	2.50	11.00
Prompt foundry	2.50	2.00	3.75	2.00	12.00	3.25	12.00
Metals—New York.							
Straits Tin	65.00	28.50	57.00	32.00	56.00	37.50	41.75
Lake copper	15.50	11.30	23.00	13.00	35.00	23.00	31.00
Electrolytic copper	14.87½	11.10	23.00	12.80	36.00	23.00	31.00
Casting copper	14.65	11.00	22.00	12.70	34.00	22.00	29.75
Sheet copper	20.25	16.50	27.25	18.75	42.00	28.00	42.00
Lead (Trust price)	4.15	3.50	7.00	3.70	7.50	5.50	7.50
Spelter	6.20	4.75	27.25	5.70	21.17½	8.37½	9.92½
Chinese & Jap. antimony.	18.00	5.30	40.00	13.00	45.00	10.50	13.37½
Aluminum, 98-99%	21.50	17.37½	60.00	18.75	67.00	53.00	62.00
Silver	59¼	47¾	56½	46¼	77¼	55¾	75¾
St. Louis.							
Lead	4.10	3.35	7.50	3.50	8.25	5.45	7.35
Spelter	6.00	4.60	27.00	5.55	21.00	8.20	9.75
Sheet zinc (f.o.b. smelter)	8.75	7.00	33.00	9.00	25.50	15.00	21.00
London.							
	£	£	£	£	£	£	£
Standard tin, prompts ...	188	132	190	148¼	205	163	178½
Standard copper, prompts	66¾	49	86¾	57¼	153	84½	138½
Lead	24	17¾	30¼	18¼	36¾	27¾	30¾
Spelter	33	21¼	110	28¾	111	44	51
Silver	27¼d	23¼d	27¼d	22¾d	37d	26½d	26½d

Comparison of Security Prices.

	Range for 1914		Range for 1915		Range for 1916		Closing,
	High.	Low.	High	Low.	High.	Low.	1916. Dec. 29
Iron and Industrial Stocks.							
Allis-Chalmers Mfg.	14¼	6	49½	7¾	38	19	27
Allis-Chalmers Mfg. pfd.	49	32½	85½	33	92	70½	84¾
American Can	35½	19¼	68½	25	68½	44	46½
American Can pfd.	96	80	113½	89	115¾	107¾	108½
American Car & Fdy.	53½	42¼	98	40	78½	52	64¾
American Locomotive	37¼	29¼	74¾	19	98¼	58	76½
American Smelt'g & Refining ..	71½	50¼	108¾	56	123¾	88½	104
American Steel Foundries	37½	27½	74½	24½	73	44	60
American Zinc, Lead & Smelt'g ..	...	...	71	67¼	97¾	29¾	37½
Anaconda Copper	38¾	24¼	91½	49½	105¾	77	81¼
Baldwin Locomotive	52½	38½	154½	26½	118½	52	57½
Bethlehem Steel	46½	29½	600	46¼	700	415	525
Bethlehem Steel pfd.	91¾	68	184	91	168	126	135
Chino Copper	44	31½	57¾	32¾	74	46½	53½
Colo. Fuel & Iron Co.	34½	29½	66½	21¾	63¼	38½	44¾
Crucible Steel .....	...	...	109¾	18¼	99½	50¼	61¾
Crucible Steel pfd. ....	...	...	112½	84	124¾	108¼	114
Driggs-Seabury .....	...	...	...	...	119¾	45½	45½
General Electric	150½	137½	185½	138	187¼	159	167
Granby Consolidated .....	...	...	91	79¼	120	80	88
Great Northern Ore Prop ..	39¾	22½	54	25¼	50¾	32	35¼
Gulf States Steel .....	...	...	...	...	193	71	125
International Harv. of N. J.	113½	82	114	90	126¾	108½	123
Inter. Harv. of N. J., pfd.	118½	113½	120	100	122	114	120
International Harv. Corp.	112	82	85	55	90¼	68½	86
Inter. Harv. Corp. pfd.	119	114½	114	90½	114¾	104¾	114¾
Lackawanna Steel	40	26½	94¾	28	107	64	82
National Enam. & Stamp..	14	9	36½	9½	36½	19¾	27
National Enam. & Stamp. pfd	86½	78	97	79	100½	90½	91
National Lead	52	40	70¾	44	74¾	57	58
National Lead pfd.	109	105	115	104¾	117½	111¼	112¾
N. Y. Air Brake	69	58	164¾	56½	186	118	143
Pressed Steel Car	46	26¾	78¼	25	88¼	42½	74
Pressed Steel Car pfd.	104½	96½	106	86	108	98½	105
Railway Steel Spring	34¾	19¾	54	19	61¾	32	49½
Railway Steel Spring pfd. ..	101	88	102	86½	104¾	95¼	99
Ray Consolidated Copper	22½	15	27½	15¼	37	30	25½
Republic Iron & Steel	27	18	57¼	19	93	42	77
Republic Iron & Steel pfd. ..	91¼	75	112½	72	117	101	104
Sloss-Sheffield	35	19½	66¾	22	93¼	37	62
Sloss-Sheffield pfd.	92	85	102	85	103½	91½	100
Texas Company	149¾	112	237	120	241½	177¼	236
U. S. Cast Iron Pipe	13½	7¾	31¾	8	28½	16¾	21
U. S. Cast Iron Pipe pfd.	49	30	55½	32½	67½	48½	60
U. S. Smelting & Refining ..	...	...	...	...	81½	57	64¼
U. S. Smelting & Refining pfd. ....	...	...	...	...	53½	50	52
U. S. Steel Corporation	67¼	48	89½	38	129¾	79¼	106¼
U. S. Steel Corporation pfd.	112¾	103¾	117	102	123	115	119½
Utah Copper	59¾	45¾	81¾	48½	130	74¾	101¾
Virginia Iron, Coal & Coke..	52	35	74	36	72¾	41	50
Westinghouse Elec & Mfg. ..	79½	64	74¾	32	71½	51¼	54½

Immigration Statistics.

Years mentioned refer to fiscal years ended June 30th. Aliens admitted include immigrant and non-immigrant, aliens departed include emigrant and non-emigrant.

Excess Arrivals Over Departures.

	Aliens.	Citizens.	Total.
1913	815,303	*61,098	754,205
1914	769,276	*82,211	687,065
1915	50,070	67,167	117,237
1916	125,941	11,197	137,138

July, 1915 ...	11,082	3,912	14,994
August	*14,324	*804	*15,128
September ..	*1,965	866	*1,099
October	4,877	662	5,539
November ...	3,292	*802	2,490
December ...	*570	*891	*1,461
January, 1916	7,303	*1,212	6,091
February	19,420	*1,826	17,594
March	23,791	4,198	27,989
April	26,143	4,471	30,614
May	24,708	2,021	26,729
June	22,184	65	22,249

July	18,244	3,634	21,878
August	21,413	304	21,717
September ..	29,310	1,443	30,753
October	28,339	*2,012	26,327
November ...	24,241	*183	24,058
Five months ..	123,447	3,386	124,733

November, 1916.

Immigrant aliens in	4,487
Non-immigrants in	6,139
Total aliens in	40,576

Emigrant Aliens out	7,164
Non-emigrant aliens out	9,171
Total aliens out	16,335

Citizens in	11,527
Citizens out	11,710
Excess citizens out	183

Change in population

Aliens	24,241
Citizens	183
Net change	24,058

* Excess of departures.

Our Foreign Trade.

Value of merchandise imports and exports, and favorable trade balance, calendar years.

	Imports.	Exports.	Balance.
1905	1,179,144,550	1,626,990,795	447,846,245
1906	1,320,501,572	1,798,243,434	477,741,862
1907	1,423,169,820	1,923,426,205	500,256,385
1908	1,116,374,087	1,752,835,447	636,461,360
1909	1,475,520,724	1,728,198,645	252,677,921
1910	1,562,904,151	1,866,258,904	303,354,753
1911	1,532,359,160	2,092,526,746	560,167,586
1912	*1,818,133,355	2,399,217,993	581,084,638
1913	1,792,596,480	2,484,018,292	691,421,812
1914	1,789,276,001	2,113,624,050	324,348,049
1915	1,778,596,695	*3,547,480,372	*1,768,883,677

1914—

Jan.	154,742,923	204,066,603	49,323,680
Feb.	148,044,776	173,920,145	25,875,369
Mar.	182,555,304	187,499,234	4,943,930
Apr.	173,762,114	162,552,570	†11,209,544
May	164,281,515	161,732,619	†2,548,896
June	157,529,450	157,072,044	†457,406
July	150,677,291	154,138,947	†5,538,344
Aug.	129,767,890	110,367,494	†19,400,396
Sept.	139,710,611	156,052,333	16,341,722
Oct.	137,978,778	195,283,852	57,305,074
Nov.	126,467,062	205,878,333	79,411,271
Dec.	114,656,545	245,632,558	130,976,013

1915—

Jan.	122,148,317	267,879,313	145,730,996
Feb.	125,123,291	298,727,757	173,604,366
Mar.	158,022,016	296,501,852	138,479,836
Apr.	160,576,106	294,745,913	134,169,807
May	142,284,851	273,769,093	131,484,242
June	157,695,140	268,547,416	110,852,276
July	143,099,620	267,978,990	124,879,370
Aug.	141,830,202	261,025,230	119,195,028
Sept.	151,236,026	300,676,822	149,440,796
Oct.	140,112,729	336,432,009	186,979,289
Nov.	164,319,169	331,144,527	166,825,358
Dec.	171,832,505	359,306,492	187,473,987

1916—

Jan.	184,362,117	330,784,847	146,422,730
Feb.	193,935,117	402,991,118	209,056,001
Mar.	213,589,785	409,850,425	196,260,640
Apr.	217,705,397	399,861,157	182,155,760
May	229,188,957	474,881,255	245,692,298
June	*245,795,438	464,784,318	218,988,880
July	182,722,938	445,472,000	262,749,062
Aug.	199,247,391	509,778,680	310,531,289
Sept.	164,028,614	515,007,408	*350,968,794
Oct.	178,658,730	492,813,918	314,155,188
Nov.	177,000,000	*517,900,000	340,900,000

* High record. † Balance unfavorable.

Copper in 1916.

New High Records Established in Production, Consumption, Prices and Volume of Business—Record Sales in September—Net Advance for Year $6\frac{1}{2}c$ to $8\frac{1}{2}c$ Per Pound—Teutonic Peace Overtures Cause the Sharpest Break in Prices.

Nineteen sixteen was a most momentous year for the copper industry. Production and consumption eclipsed all previous records. Domestic shipments were the heaviest in trade history but exports fell behind foreign takings in 1913 and 1914. The volume of business was never so great in any previous year and prices of Electrolytic established a new maximum level. Lake copper sold at the highest price touched since 1873.

The net result of the year's fluctuations in prices was an advance of $6\frac{1}{2}c$ to $8\frac{1}{2}c$ per pound but the range between the lowest and the highest points touched was 10c to 13c per pound. The most serious break in the market—4c to 5c per pound—came in December, when the Teutonic peace overtures alarmed all but the largest producers, who, with capacity sold for six months ahead refused to recognize the lower rates made by other interests.

January.

The commercial strength of the market at the beginning of 1916 was made evident by a net rise of 3c per pound in the price of spot Electrolytic at New York and an advance of £14 at London in January. The selling campaign throughout the year was vigorously pushed with occasional lulls. The needs of war munitions manufacturers at home and abroad was the dominant factor. All other developments were subordinated to the demand of war and consequently extraneous happenings were of relatively minor importance.

Early in the year speculative interests were most prominently in the market with a tendency to exploit the necessities of the warring nations. Their operations fanned the trade excitement and created a feverishly nervous state that had not entirely subsided when the year closed. In January business was largely confined to March, April, May contracts, sales being made at 23c to 25.50c, but spot copper sold as low as

23c and as high as 26c per pound and some substantial commitments were made through June 1916, before the month had closed.

February, March.

In February the market was phenomenally strong and the net advance in prices was 2c to $2\frac{1}{2}c$ per pound at New York and £10 10s in American Electrolytic at London. Domestic business was mainly in May and June positions at 25.50c to 27.50c but some important export orders were placed for delivery over the last three months of 1916 at 24c to 26.50c per pound. War munition orders were less prominent and larger contracts were placed at home by other home consumers. In the last few days of March vigorous buying on domestic and foreign account compensated for the dulness that had prevailed during most of the month. Renewed vitality was evident in the purchase of 10,000 tons of Electro for April, May, June shipment at 27 to 27.50 by French government and exercise of an option on 60,000 tons by the British government. Sales during the last five days of the month on domestic and foreign account aggregated about 400,000,000 pounds at prices ranging from 27.25c for the second quarter down to 26.75c for the last quarter. Spot ranged between $26.87\frac{1}{2}c$ to 28.25 per lb. At New York there was only a net fractional advance in prices while the London market was subjected to sudden and violent fluctuations within a range of £25 as far as Standard was concerned.

April.

Activity, strength and buoyancy were prominent features of the trade early in April, after a temporary lull and the large buying that carried prices upward 1 to 3c per lb., from 27.50c to 30.50c per pound for spot, was accompanied by no little excitement. Sales for the month aggregated between 300,000,000 and 400,000,000 pounds, three-

Lake Copper Prices.

Monthly average prices of Lake Copper in New York.

	1912.	1913.	1914.	1915.	1916.
Jan.	14.37½	16.89	14.76	13.89	24.10
Feb.	14.38½	15.37½	14.98	14.72½	27.44
Mar.	14.87	14.96	14.72	15.11	27.42
Apr.	15.98	15.55	14.68	17.43	28.91½
May	16.27	15.73	14.44	18.81	29.28½
June	17.43	15.08	14.15	19.92	27.44
July	17.37	14.77	13.73	19.42	25.31
Aug.	17.61	15.79	12.68	17.47	26.58
Sept.	17.69	16.72	12.43½	17.76	27.86
Oct.	17.69	16.81	11.66	17.92½	28.37½
Nov.	17.66	15.90	11.93	18.86	31.71
Dec.	17.62½	14.82	13.16	20.37½	33.07½
Av. .	16.58	15.70	13.61	17.64	28.17

Electrolytic Copper Prices.

Monthly average prices of Electrolytic Copper in New York.

	1912.	1913.	1914.	1915.	1916.
Jan.	14.27	16.75½	14.45	13.71	24.10
Feb.	14.26	15.27	14.67	14.57	27.46
Mar.	14.78	14.92½	14.33½	14.96	27.44
Apr.	15.85	15.48	14.34	17.09	29.31
May	16.16	15.63	14.13	18.60	29.81
June	17.29	14.85	13.81	19.71	27.49½
July	17.35	14.57	13.49	19.08	25.60
Aug.	17.60	15.68	12.41½	17.22	27.36½
Sept.	17.67	16.55	12.08½	17.70½	28.26
Oct.	17.60	16.54	11.40	17.86	28.64
Nov.	17.49	15.47	11.74	18.83	32.22½
Dec.	17.50½	14.47	12.93	20.35	33.84
Av. .	16.48	15.52	13.31½	17.47	28.46

Casting Copper Prices.

Monthly average prices of Casting Copper in New York.

	1912.	1913.	1914.	1915.	1916.
Jan.	14.02	16.57	14.27½	13.52	23.06½
Feb.	14.02	15.14	14.48	14.17	26.03
Mar.	14.53	14.76	14.18	14.34	25.90
Apr.	15.72½	15.33	14.18	16.48	27.16
May	16.01	15.45½	14.00	17.41	27.37
June	17.08	14.72	13.65	18.74½	25.10
July	17.09	14.40½	13.34½	17.76½	23.61
Aug.	17.35	15.50	12.27	16.46	24.67
Sept.	17.51	16.37½	12.00	16.75	25.93
Oct.	17.44	16.33	11.29	17.32	27.17
Nov.	17.34	15.19	11.63	18.41	30.37½
Dec.	17.34	14.22	12.88½	19.73	31.74
Av. .	16.29	15.33	13.18	16.76	26.51

Sheet Copper Price Changes.

The changes in the base price of sheet copper this year are given below, with the price of Lake copper on the same date.

1916—	Sheet Copper.	Lake Copper.
January 22	31.00	24.75
January 24	31.50	25.25
January 31	32.00	25.25
February 5	33.00	26.00
February 11	34.00	27.50
February 23	35.00	28.25
March 1	34.00	28.12½
March 25	34.50	27.37½
April 13	35.50	29.25
April 20	36.50	29.75
May 5	37.50	29.75
August 2	35.50	25.50
August 18	37.50	27.00
November 10	38.50	29.75
November 14	40.00	31.75
November 20	41.00	33.75
November 29	42.00	33.75

Waterbury Copper Averages.

	1912.	1913.	1914.	1915.	1916.
Jan.	14.50	17.00	14.75	14.12½	24.75
Feb.	14.50	15.50	15.12½	15.25	27.75
Mar.	15.00	15.12½	15.00	15.75	28.00
Apr.	16.00	15.75	14.87½	18.50	29.00
May	16.37½	15.87½	14.75	22.50	29.87½
June	17.50	15.37½	14.37½	22.50	28.25
July	17.75	14.75	14.12½	22.25	27.25
Aug.	17.75	15.62½	13.00	19.50	27.00
Sept.	17.87½	16.87½	12.87½	18.50	28.00
Oct.	17.75	16.87½	12.25	18.25	28.87½
Nov.	17.75	16.25	12.25	19.37½	33.25
Dec.	17.75	15.00	13.50	20.75	34.25
Av. .	16.71	15.83	13.91	18.94	28.85½

Exports of Copper From the United States.

(In tons of 2,240 lbs.)

	1913.	1914.	1915.	1916.
January ..	25,026	36,018	26,193	23,663
February .	26,792	34,634	15,583	20,648
March ...	42,428	46,504	30,148	26,321
April	33,274	35,079	18,738	21,654
May	38,601	32,077	28,889	16,062
June	28,015	35,182	16,976	39,595
July	29,596	34,145	17,708	35,066
August ..	35,072	16,509	17,551	32,160
September	34,356	19,402	14,877	29,803
October ..	29,239	23,514	24,087	33,224
November	29,758	24,999	23,168	22,598
December	30,653	22,166	42,426	22,682
Totals ..	382,810	360,229	276,344	323,476

fourths of which was taken on foreign account, including sales to France, Italy and Russia as well as to Great Britain, for delivery, mainly in May-June and July. It was pointed out at the end of April that large producing interests had sold the equivalent of nine months capacity.

May.

In May, the market was subjected to the action of many cross currents, resulting in a sharp reaction in business and in prices, expressed in drop of $2\frac{1}{2}$ c to 3c per pound on spot from 30.50c to 31.00c to 28.00c to 28.50c, and a decline of 2c per pound on future positions. August receding from 29.50c to 27.50c and later deliveries from 28.75 to 26.75c per pound. Labor was restless, strikes were frequent and numerous, and the wheels of industry revolved less rapidly. Consumers reminded by accumulating stocks that they had over-bought, sought relief in resales, resulting in the disappearance of premiums on nearby positions. The downward tendency was accelerated by pressure to sell by dealers and speculators operating on the short side, who were encouraged by evidence of increased production and smaller melting. Substantial amounts were persistently offered abroad causing a violent decline in American Electrolytic at London. On the other hand large producers who had over-sold, became temporary purchasers to prevent default in shipments on contracts. Charges of manipulation by large war munition manufacturers were made although the other reasons cited were sufficiently potent to have caused the reaction. Dulness was prominent during the last two weeks of the month and prices were weak.

June.

Smaller orders from war munition manufacturers in June, in conjunction with labor demands for shorter hours of work and higher wages with decreased efficiency, intensified the trade depression that began in May. Consumption was further reduced and prices suffered declines of $1\frac{1}{2}$ c to 2c per pound, spot receding from 28.50c to 26.50c per pound, making the drop from the high level attained early in May. 3c to 4c per pound on nearby months, and 3c to $3\frac{1}{2}$ c

on shipments to be made in the last quarter of the year. Some buying to cover belated munition contracts developed a better tone in the last week of June, but rumors that the war would be over by the end of the year increased the desire to sell in the open market. At London the market was dull and heavy as well as weak throughout the month.

July.

Sentiment continued bearish throughout the greater part of July and almost daily declines in prices indicated trade depression. Venturesome operators quietly made short sales of considerable magnitude. About the middle of the month, some large producing and selling interests absorbed about 10,000,000 pounds of these offerings in an unsuccessful effort to re-establish the market, but by July 20th, prices had further receded $2\frac{1}{4}$ to $3\frac{1}{4}$ c a pound from 27 to 24c or less for spot. Release of some large orders for high explosive shells in the last week of the month created an improved tone and although no large copper purchases were made

Copper In December.

Day.	— New York —			London.		
	Lake.	Electro.	Casting.	Standard.		
	Cents.	Cents.	Cents.	£	s	d
1	33.75	34.75	32.37½	151	0	7
4	33.75	34.75	33.50	151	0	0
5	34.00	35.25	33.25	152	0	0
6	34.25	35.25	33.25	153	0	0
7	34.75	35.50	33.25	152	0	0
8	34.75	35.50	33.25	151	0	0
11	34.75	35.75	33.25	148	0	0
12	34.75	35.25	33.25	148	0	0
13	34.00	35.25	32.25	142	10	0
14	34.00	35.00	32.25	142	10	0
15	33.75	34.75	31.75	142	10	0
18	33.25	34.25	31.75	142	10	0
19	32.25	34.25	31.25	142	10	0
20	31.75	32.75	30.75	142	10	0
21	31.50	32.00	30.25	142	10	0
22	31.50	31.50	30.25	141	10	0
26	31.25	31.50	29.75	141	10	0
27	31.25	31.25	29.75	140	10	0
28	31.25	31.25	29.75	139	10	0
29	31.00	31.00	29.75	138	10	0
Low ..	31.00	31.00	29.50	153	0	0
High .	35.00	36.00	34.00	138	10	0
Av'ge	33.07½	33.83¾	31.74	145	5	0

by domestic consumers the decline of the three preceding weeks, was recovered. The opening of negotiations by the Allied Entente governments for round tonnages of copper for shipment over the last half of 1917, too, was encouraging to producers when the month closed.

August.

A stronger undercurrent was evident early in August and in the second week there was considerable activity on domestic account with moderate buying for export by Russia and France. Home melters, stimulated by negotiations for a large tonnage for Great Britain, came into the market in force and by the middle of the month a buying movement was in full swing; prices of Electrolytic recovering 1½c per pound. Activity continued in the third week with another advance of ½c per pound making a rise of 2c per lb. over the prices prevailing at the end of July, spot selling up to 28.50 to 29c; there was some disappointment in the closing week when the British negotiations came to naught and dealers in the open market were willing to make concessions from producers' asking prices in order to secure orders. The London market recovered £5 net, on American Electrolytic during August.

September.

A hesitant spirit possessed the trade at the beginning of September but before the end of the first week a strong tone developed and in the second week large domestic consumers placed contracts for 125,000,000 pounds of Electrolytic to cover heavy export sales of brass rods and copper wire for shipments late in 1916 and early 1917. Other domestic consumers bought more freely for shipment over the last quarter of 1916 and the market gradually hardened. On September 23rd, large producing interests officially announced the consummation of a contract for 200,000 tons—148,000,000 pounds—of refined copper for export to the Allied Entente governments during the first half of 1917 at the rate of 75,000,000 pounds per month. This maximum sale was made at 26c per pound. Total sales during September were 650,000,000 pounds, this being the heaviest monthly

transactions in the history of the industry. The net rise in prices during the remainder of the month was ½c to 1c per pound, November selling at 28.50c, December at 28.00c and first quarter at 27.00c when the month closed. American Electrolytic at London advanced £10 net, during September.

October.

In October, sales on domestic and foreign account aggregated 200,000,000 pounds and prices advanced ½c to 1c per pound with a further sharp advance anticipated. Orders were placed mainly for shipment over the balance of 1916 but also included deliveries to be made in the first quarter and the first half of 1917. On the closing days of the month large producers sold Electrolytic at 29.00c to 29.25c for November, December, at 28.00c for January, at 27.75c for February and 27.50c for March. American Electrolytic at London advanced £2 10s net, during the month.

November.

Sales of refined copper in November were very large, aggregating 600,000,000 pounds, being next to the September bookings the largest orders ever taken in a single month. The advance in prices was violent, 5c to 6c per pound at home and £26 10s at London on Electrolytic. Buying by domestic consumers was particularly vigorous about the middle of the month when in one week transactions aggregated 300,000,000 pounds. Consumers were excited by reports of negotiations for 100,000 tons more for France following previous liberal sales for export to Russia, France and Italy, and they bought for shipment far into the future with feverish haste. After each transaction prices advanced sharply causing consternation among buyers. When the month closed Electrolytic prices had established a new maximum record and Lake copper sold at the highest price since 1872 now sold at 34.50 to 35c, first quarter 1917 at 33.50 to 34c and second quarter at 32.50 to 33.50c per pound. Reduced buying during the latter part of the month was largely due to the sold-up condition of the refineries but a few consumers were more conservative and inclined to await developments.

Needy consumers at the eleventh hour were forced to pay 34.75c to 35.00c for November-December. For the first quarter of 1917 holders asked 33.50c to 34.00c. Sales of second quarter were made at 32.50c to 33.50c while fourth quarter was held at 31.00c to 32.00c per pound.

December.

Sales of 50,000,000 to 75,000,000 pounds of Electrolytic and Lake copper were made during the first week of December on domestic and foreign account. Consumers were constantly in the market to cover requirements for the first half of 1917, but with 90% to 95% of refinery capacity sold for such period, it was difficult to place contracts of moment. In the second week, however, business was of smaller proportions. In the middle of the month a radical change in the trade was inaugurated by the Teutonic overtures for peace. Consumers suddenly discovered that they had overbought: dealers and operators found previously invisible supplies, small individually, but liberal in the aggregate, ready for early shipment. To dispose of this metal, sharp reductions in prices were submitted to attract buyers. The smaller domestic and foreign demand made sellers more anxious, and prices in the open market dropped 3c to 4c per pound during the last two weeks. Spot Electrolytic was nominal at 30.50c to 31.00c, January, February, March 29.50c to 30.50c, April, May, June at 28.75c to 29.25c; third quarter at 27.75c to 28.25c, and fourth quarter at 26.75c to 27.25c per pound. The year closed upon a quiet and unsettled market but large consumers were holding out for 1c to 2c per pound more than prices asked in the open market. Sales in 1916 were huge, being estimated to be 3,100,000,000 pounds, covering shipments made in 1916 and contracts embracing the whole of 1917.

According to the figures issued by the U. S. Geological survey there was an increase in the smelter output of copper in 1916 of 540,000,000 pounds and an increase in the refinery output of 677,000,000 pounds as compared with 1915.

The output of smelters and refineries since 1912 are shown below, in pounds:

	Smelter.	Refinery.
1916	1,928,000,000	2,311,000,000
1915	1,388,009,527	1,634,204,448
1914	1,150,137,192	1,533,781,394
1913	1,224,484,098	1,615,067,782
1912	1,243,268,720	1,568,104,478

The increase in the mine and smelter production was phenomenal but more startling still was the increase of 677,000,000 pounds in the output of refined copper. It has been said that the refineries were running far behind the smelters and that the output for the year would not reach 2,000,000,000 lbs., instead of which it exceeded 2,300,000,000 pounds, an average of almost 200,000,000 pounds per month against 137,000,000 pounds monthly in 1915. With the production last year 300,000,000 pounds more than was expected and with additional refining capacity now available, we will be able to produce more than 2,500,000,000 pounds this year if this quantity is required.

The U. S. Geological Survey gives no record of the stock of copper at the refineries at the end of the year, neither is there any data given concerning the domestic consumption, aside from the statement that the amount available for consumption was considerably more than in 1915. We estimate the supply available for consumption in 1916 at 1,633,000,000 pounds as follows:

Stock on hand Jan. 1	82,429,666
Production 1916	2,311,000,000
	<hr/>
	2,393,429,666
Exports 1916	760,000,000
Available supply	1,633,429,666

Supposing that the stocks in producers' hands at the end of the year were the same as they were at the beginning (82,000,000 pounds) and they could not have been more than that, then the deliveries to consumers were 1,550,000,000 pounds. What proportion of this was actually consumed we have no means of estimating, but we place the figures in comparison with those for previous years and our readers can draw their own conclusions:

	Apparent Consumption.
1916	1,550,000,000 lbs.
1915	1,043,461,982 "
1914	620,445,373 "
1913	812,268,639 "
1912	775,978,332 "

Tin in 1916.

Nineteen-Sixteen A Year of Frequent and Violent Fluctuations in Prices

—Dramatic Incidents Furnished by U-Boat Activities—

Variation in Prices Here, 18½c Per Pound; Abroad,

£42 on Spot, £35 10s on Futures.

Tin was subject to frequent, rapid and violent, fluctuations in prices at home and abroad throughout the year 1916, notwithstanding the control exercised over the industry by the British Government. Although the trade was more or less free from foreign speculative manipulation and home operators were held in leash, market manoeuvring at times emphasized the fluctuations resulting from natural causes. German submarine operations furnished most of the dramatic occurrences and were indirectly responsible for the feverish excitement which occasionally possessed the trade. There were other important developments, however, that at times elated or depressed the industry not a few of them having a financial origin.

In general, the American market was more liberally supplied than in peaceful years, but the withholding of shipping permits by the British authorities occasionally caused depletion or congestion of supplies, expressed in higher or lower prices. Many were the annoyances in the twelve months and some of them were of a serious character, but taken as a whole, the trade has much reason to be thankful for benefits received.

The extremes in prices during the year, is shown in sales of spot tin at New York on March 10th at 56c per pound due to stringency in supply and similar sales at 37.50c per pound on July 19th, during a time of profound depression caused by forced liquidation abroad. The variation was 18½c per pound. At London, the highest prices for standard tin were £205 for spot and £199 for futures on April 10th and the lowest prices were £163 on spot and £136 10s on futures, established on July 19th. The fluctuations covered a range of £42 on spot and £35 10s on futures.

January.

On the first business day of the year

the tin trade at New York was excited over reports of the sinking of a ship en route from the East Indies with a cargo of 500 tons of tin, the market advancing to 42c from 40.50c at which price the market had closed on the last business day of 1915. On the following day, London rose sharply and spot tin here, was unavailable under 45c. The reported torpedoing of the Ken Kon Maru in the Mediterranean was not confirmed and by January 7th, the price receded to 41.75 at New York; the market remaining quiet and relatively steady during the remainder of the month. With an increase of 3,000 tons in the visible supply during 1915, fear of an inadequate supply for American needs was no longer entertained when 1916 opened. It was pointed out that in addition to a visible supply of 17,041 tons of Straits tin on January

Tin Prices in December.

	New York	London	
		Spot	Futures.
1	45.12½	190 5 0	192 5 0
4	44.87½	189 5 0	190 15 0
5	44.50	188 0 0	189 15 0
6	44.00	187 0 0	189 0 0
7	43.80	186 10 0	188 10 0
8	43.50	185 15 0	187 5 0
11	43.37½	185 0 0	186 10 0
12	43.00	184 15 0	186 15 0
13	42.87½	184 5 0	186 0 0
14	43.00	184 5 0	186 0 0
15	43.00	184 15 0	186 5 0
18	42.62½	183 0 0	185 0 0
19	42.50	182 10 0	184 10 0
20	41.75	181 0 0	183 0 0
21	41.25	179 10 0	181 10 0
22	40.50	177 0 0	179 0 0
26	40.62½	177 0 0	179 0 0
27	40.50	176 0 0	178 0 0
28	40.75	176 15 0	178 15 0
29	41.75	178 10 0	180 10 0
High	45.12½	190 5 0	192 5 0
Low	40.50	176 0 0	178 0 0
Average .	42.66½	183 1 0	184 18 3

Visible Supplies.

Visible supply of tin at end of each month:

	1912.	1913.	1914.	1915.	1916.
Jan.	16,707	13,971	16,244	13,901	17,041
Feb.	14,996	12,304	17,308	14,548	16,511
Mar.	15,694	11,132	16,989	15,467	18,782
April	11,893	9,822	15,447	15,785	19,739
May	14,345	13,710	17,862	14,646	19,614
June	12,920	11,101	16,027	15,927	19,363
July	13,346	12,063	14,167	16,084	18,404
Aug.	11,283	11,261	14,452	15,127	18,042
Sept.	13,245	12,943	14,613	15,191	16,192
Oct.	10,735	11,857	10,894	13,154	17,415
Nov.	12,348	14,470	11,483	16,451	21,186
Dec.	10,977	13,893	13,396	16,216	.....
Av'ge	13,207	12,377	14,907	15,208	.....

Shipments From the Straits.

Monthly shipments of tin from the Straits Settlements to Europe and United States:

	1912.	1913.	1914.	1915.	1916.
Jan.	4,018	6,050	5,290	5,200	6,095
Feb.	5,260	4,660	6,520	5,584	6,250
Mar.	5,150	4,810	4,120	4,970	5,170
April	4,290	4,400	4,930	5,270	4,685
May	5,760	6,160	6,900	6,759	3,965
June	4,290	4,280	5,870	6,665	6,210
July	4,580	4,770	4,975	5,606	5,410
Aug.	5,210	6,030	3,315	4,712	4,526
Sept.	5,430	5,160	4,973	5,296	3,270
Oct.	4,450	5,020	4,610	4,441	5,868
Nov.	5,600	5,560	5,155	6,713	5,380
Dec.	4,980	5,110	6,435	5,301	4,758

Total	59,018	62,550	63,093	66,517	61,587
Av'ge.	4,918	5,213	5,258	5,543	5,132

Consumption In the U. S.

Monthly deliveries of tin in the United States exclusive of Pacific Coast:

	1912.	1913.	1914.	1915.	1916.
Jan.	3,700	3,700	3,600	2,300	4,452
Feb.	4,050	3,500	3,300	3,375	6,388
Mar.	4,000	5,900	4,450	3,200	4,726
April	5,400	3,450	4,300	3,200	4,202
May	4,250	3,350	3,800	5,600	5,455
June	2,850	3,800	3,650	3,900	6,398
July	5,150	3,900	3,900	5,300	4,432
Aug.	4,300	3,600	2,900	4,500	4,335
Sept.	3,600	3,100	3,600	4,300	4,025
Oct.	3,850	3,700	3,700	4,900	4,556
Nov.	4,300	2,800	2,600	2,975	3,165
Dec.	4,050	3,100	1,900	5,200	4,082
Total	49,500	43,900	41,700	48,750	56,216
Av'ge.	4,125	3,658	3,475	4,062	4,684

Monthly Tin Statistics.

Compiled by New York Metal Exchange.
(Tons of 2,240 lbs.)

	Dec. 1916.	Nov. 1916.	Dec. 1915.
Straits shipments	2,870	1,407	777
To Gt. Britan..	623	498	959
" Continent ..	1,265	3,475	3,565
" U. S.			
Total from Straits	4,758	5,380	5,301
Total from Australia	200	315	245
Consumption			
London deliveries	1,200	1,197	1,189
Holland deliveries	63	119	105
U. S.	4,082	3,165	5,200
Total	5,345	4,481	6,494

Stocks at close of month:

In London—			
Straits, Australian	2,740	3,662	2,221
Other kinds	1,550	1,048	1,682
In Holland			
In U. S.	3,511	2,850	1,371

Total	7,801	7,560	5,274
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Afloat close of month:

Straits to London .	4,507	2,532	1,378
" to U. S. ...	5,318	6,368	8,125
Banca to Europe ..	3,111	4,726	1,439

Total	12,936	13,626	10,942
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	Dec. 31, 1916.	Nov. 30, 1916.	Dec. 31, 1915.
Total visible supply	20,737	21,186	16,216

Straits Tin Prices In New York.

	1912.	1913.	1914.	1915.	1916.
Jan.	43.24	50.45	37.74	34.30	41.88
Feb.	43.46	48.73	39.93	37.32	42.63
Mar.	42.86	46.88	38.08	49.93½	50.42
Apr.	44.02	49.12	36.10	47.98	51.75
May	46.12	49.14	33.30	38.78	49.15
June	47.77	44.93	30.65	40.37	42.18
July	44.75	40.39	31.75	37.50	38.46
Aug.	45.87	41.72	50.59½	43.39	38.54
Sept.	49.18	42.47	32.79	33.13	38.70½
Oct.	50.11	40.50	30.39½	33.08	41.16
Nov.	49.90	39.81	33.50	39.37½	44.17
Dec.	49.90	37.64	33.60	38.75	42.66½
Year	46.43	44.32	35.70	38.66	43.48

first, Bolivian ores, equivalent to 12,000 tons pure tin, were held at Liverpool and that the stock of Banca tin held by the Dutch Government at Batavia was at least 5,000 tons. The disquieting factors were the danger to shipping from Teutonic attacks and the contemplated action of the British Government to restrict the free movement of tin to this country.

February.

In February, there were some interesting episodes with dramatic developments toward the close of the month. A strong tone prevailed in the main and the net result of the fluctuations in prices was an advance of 5c to 6c per pound on nearby and 3 to 4c per pound on future positions at New York, while spot Straits at London was up £10 10s. The advance at Singapore was £9 5s. Consumption in the United States was unusually heavy, being record-breaking at the tin plate works. About February 10th, a large business resulted from the lower prices current and by the 15th, American buyers purchased about 3,000 tons here and abroad. To escape the high rate of war insurance on ships passing through the danger zone, nearly two-thirds of the Straits tin shipped to this country in January came by way of the Capes and the Pacific Ocean. On February 21st, interesting London cables announced the purchase of some Banca tin by France and of 300 tons Straits tin by the United States Government for the Navy Department. On February 25th, spot tin at New York was difficult to buy at 40c; in the next few days a shortage developed and the price was rushed up to 48c. At the end of the month, although 800 tons of the 1,300 held in stock were owned by consumers, there was not enough available to relieve the situation because of the agreement with the British Government preventing resales. The excitement at this time was confined to operators who were short because of restrictions on shipments from London.

March.

The three prominent features in March were the heavy consumption in the United States; the record-breaking output at the Straits and the radical

changes in merchandising made necessary by the British trade regulations incidental to the war. The visible supply on March 31st, was 18,782 tons, this being the largest since November, 1910, when spot tin was 37.30c. On March 1st, spot tin was 47.50c here, but there was a variation of 10c per pound during the month, sales being made as high as 56c and as low at 46c per pound. The restrictions placed upon speculation in metals used in the manufacture of war munitions by the British Government, although not aimed at tin directly, caused temporary demoralization in the trade, which was followed by a sharp rise on March 6th, when the British Government rescinded its orders. The stringency in the local supply available for the open market caused an advance on March 10th to 56c per pound for spot, and nearby positions continued strong because of small arrivals from abroad. The result was to bring out liberal offerings of English and Chinese tin for American importation. With the approach of steamships afloat, relief of the tension was shown in offerings of 49c per pound ex-steamship at dock on March 22nd. During the last week of the month there was considerable irregularity. The foreign markets broke £4 to £5 during the first few days, followed by a rise of £12 to £16 that culminated March 29th. In the last three days there was a reaction here and abroad, all positions.

April.

In April the price of tin was influenced by the difficulty of securing permits for shipments from London; by the manipulation of the price of spot tin at New York and by the sharp advance in war risks on tin shipped to the United States from foreign countries. As the market was swayed by one or all of these factors from day-to-day or from week-to-week prices were very irregular. Spot tin at New York varied 6c per pound while prices at Singapore fluctuated within a range of £6 and the London market changes were within a range of £4. The net result at the close of the month was only a slight change at New York, a decline of £4 at London and an advance of £5 at Singapore.

May, June.

May was one of the duller months in Straits tin ever experienced by local dealers. After the first week, when prices (with the exception of spot tin at New York) advanced on all positions here and abroad, there was a severe break in prices, with a few ephemeral rallies, throughout the month. Spot tin at New York, broke $5\frac{1}{2}$ c per pound and future positions declined $2\frac{1}{2}$ c to 3c per pound. At London, there was a net drop of £10 to £10 10s on all positions while the Singapore market was down £10. The extreme fluctuations abroad, however, were from £12 10s to £13 10s. Otherwise, the main features were annoying and exasperating delays in shipments from the Straits and from London, the scarcity of spot tin at New York and evidence of heavy American consumption. Domestic consumers generally, became independent of the war market for spot Straits tin through arrivals on contracts or by taking advantage of the larger supply of Banca, English and Chinese tin offered at liberal concessions from prices demanded for spot Straits tin. A precipitous decline marked the last three days of the month here and cables from the Straits revealed anxiety to do business in far-off futures at substantial concessions. There were three salient features in June: A plethora of supplies; record-breaking deliveries into home consumption and a lack of stamina in the London market. The result of these combined factors was to cause a further sharp break in prices here. Spot tin after selling at 44.25c at the beginning of the month, was difficult to sell at 39c on June 28th—a drop of $6\frac{1}{4}$ c per pound. The highest price touched was 56c on March 10th; the break to June 28th was thus 17c per pound. On the last two days of the month there was a fractional recovery in prices. Another interesting development was the elimination of the high premium commanded by spot over the prices current for future delivery. The supply available during the month was extremely heavy—8,869 tons—and stocks at New York and at outports at the end of the month were 3,963 tons. Future positions also sustained declines in prices of $3\frac{1}{2}$ c to 5c per pound from the end

of May to June 27th, with recoveries of $\frac{1}{2}$ c to 1c per pound during the last three days. Foreign markets also tended downwards. The lowest prices were made June 27th and 28th, when London prices were within 10s of the minimum touched this year—January 3rd. Fluctuations ranged between £15 and £18 with recoveries of £2 5s to £3 in the closing days of the month. The Singapore market broke £17 15s but recovered £4 15s. It is of interest to note that the highest price for spot Standard tin in 1916 was £205 on April 10th. Deliveries into American consumption in June, 6,398 tons, were the largest of record.

July.

Profound depression shrouded the market during the first 19 days of July, when spot dropped to $32\frac{1}{2}$ c. Consumers buying cautiously at first; later, became distrustful, awaiting developments. By the 18th, the market had dropped 1 to $2\frac{1}{8}$ c per pound, forced liquidation abroad being the impelling cause. During the same period the London market dropped £10 5s to £11 and the Singapore price broke £12 10s net. Relieved by the unloading of burdensome supplies upon America, the English market recovered £3 to £3 10s on July 20th, and foreign limits to America were up 1c per pound. There was a further advance on all positions here and abroad in the days immediately following and the market closed dull but firm at a net decline of $\frac{7}{8}$ c to $1\frac{7}{8}$ c per pound at home and with a net recession of £5 to £5 15s abroad.

August.

In August, a moderate advance was established on all positions here and abroad but the entire month's developments were disappointing to traders. Deliveries into American consumption, however—4,335 tons—were satisfactory. Dullness prevailed during the first eight days and prices receded $\frac{3}{8}$ c to $\frac{7}{8}$ c per pound. An upward movement began on the 9th, culminating on the 14th with an advance of $1\frac{1}{2}$ c to $1\frac{3}{4}$ c per pound on Straits and 2c on Banca at New York. London was up, £6 and the Singapore rise was £7 15s in eight days, but from lack of support the foreign markets dropped in the next few days: the weakness there being reflect-

ed in recessions at New York. For several days after the 23rd, there was some recovery but fear of a strike among railroad employees with more tin immediately available, caused a break on the 30th. The net result of the August fluctuations was a rise of $\frac{1}{2}c$ to $\frac{3}{4}c$ per pound on the various positions.

September.

In September, the only stirring event came in the last week, when submarine activity in the Mediterranean reminded the trade that sudden "accidents" to tin-laden ships would bring heavy losses. Insurance rates were up 1%. The net result of the September fluctuations in prices of tin was an advance of $\frac{5}{8}c$ to $\frac{3}{4}c$ per pound on all positions to the end of the year, and of $1\frac{1}{4}c$ per pound in domestic arrivals during the first quarter of 1917. Abroad, there was a net rise of £4 10s to £4 15s on all positions. One notable fact was the large increase in the use of tin in the manufacture of war munitions by Great Britain, France and Russia.

October.

At the beginning of October, the situation in tin was commercially and statistically sound although large stocks were in store. Shipments from the Straits were heavy—5,868 tons—compensating for the smaller movement in September which was due to lack of vessels, not to decrease in output. An active American demand developed into the best buying movement for some time, carrying prices upward. Early in the second week German submarine activity again disturbed the market causing a sudden advance of $4c$ per pound on spot, but with the safe arrival of several ships the tension relaxed and prices receded. The net result was an advance of $2\frac{1}{2}c$ per pound on spot, and $2\frac{1}{4}c$ to $2\frac{3}{4}c$ per pound on other positions at home. In foreign markets the changes resulted in a net advance of £5 5s to £6 15s at London and a net rise of £8 5s at Singapore.

November.

Throughout November a strong tone prevailed and the fluctuations in prices at home led to a net advance of $3\frac{1}{4}c$ per pound on nearby positions and 3 to $3\frac{1}{2}c$ per pound on future positions. In the first three weeks there were no important reactions, the advance culminating

on November 22nd and 23rd, when spot tin had risen $3\frac{3}{4}c$ to $4c$ and future positions $3c$ to $3\frac{1}{2}c$ per pound. In the subsequent decline, future positions yielded only fractionally, and on nearly positions the recession was $\frac{1}{2}c$ to $\frac{5}{8}c$ per pound. The course of foreign markets was similar. At London up to the 23rd, the net advance was £11 5s to £12 in all kinds and positions. Singapore rose £12 15s. In the last week a reaction of £1 10s to £2 10s was sustained. The strength of the market was attributed to the increased output of tin plate, to the larger use of tin in war munitions, to the difficulty in securing English shipping permits, to the tendency to reduce output at the Straits, to the smaller supply available outside of the Straits and to the stronger attitude of the Dutch Government controlling Banca output. These factors in conjunction, apparently, offset the relatively small American buying.

December.

In December, not only was all of the November gain lost, but prices here and abroad dipped to the low level recorded early in October. The reaction was complete when on December 27th spot tin had broken $4\frac{3}{4}c$ to $5c$ per pound, and future positions had dropped $3\frac{1}{4}c$ to $3\frac{1}{2}c$ per pound. During the same period the London market fell £13 on spot Straits and £12 15s to £13 on Standard, while the Singapore price broke £15 10s, but in the last two business days of the month foreign markets recovered £2 10s on all positions. Banca tin, too, because of large arrivals at New York, late in the month, suffered a break of $5c$ per pound; indeed, it was the large Banca supply that sympathetically caused the drop in spot Straits. In the last two business days spot Straits sold at 40.75c to 41.50c, a rebound of $\frac{3}{4}c$ to $1\frac{1}{2}c$ per pound, and higher prices were asked at the close. Future positions also were $\frac{3}{4}c$ per pound higher, but quiet. December buying was small in volume. Among the interesting developments were inquiries for 1,000 tons by the United States Government; a repetition of the report that the German Government was negotiating for Banca stocks to be delivered after the war and an advance of from 5% to 10% in insurance war risks on tin afloat for United Kingdom.

Spelter in 1916.

**Extremes in Prices Reached, Advancing and Declining With Great Violence and the Volume of Business Make 1916 a Most Remarkable Year—
Variation in Prices Here 127³/₈c Per Pound; at London £66—
Orders From Munition Manufacturers the Chief Factor.**

The "prince or pauper" epigram applied by Andrew Carnegie to the steel industry might be used with equal force to describe the state of the spelter industry in 1916. The furor created by the excited buying of spelter when war munition contracts were new to the United States caused a phenomenal advance in prices which was the regal state of the smelters in 1915. Early in 1916, too, renewed active buying of spelter by manufacturers of war munitions, including brass founders, again carried prices to dizzy heights, the pinnacle of 21c per pound at St. Louis, being reached in the third week of February. The foreign market, too, was greatly excited and the highest price of trade history, £110, was recorded at London on February 29th. The seemingly vast profits being made in the smelting industry in 1915-16 caused the rehabilitation of obsolete plants, a rush in the building of new works and the pushing of capacity of the active smelters to share in the returns from the smelting "El Dorado".

The pauper stage came in August, when by reason of the great increase in production and the falling off in the abnormal demand, spelter sold down to 8.12¹/₂c per pound, August 8th, at East St. Louis, as the financially weak producers were compelled to put their product upon the market at whatever price it would bring. The break was 12.87¹/₂c and a painful readjustment was in progress. At London, prices dipped to £44 on August 7th and 8th, a break of £66 from the highest point touched in February.

A substantial recovery was made, however, in the last four months but prices throughout the year sustained frequent rapid and wide fluctuations. Indeed, the ups and downs of spelter were a partial index of the war munition contracts that were intermittently placed with American and Canadian

manufacturers. Events in the productive fields, however, also had a potent influence upon prices.

January.

A strong tone prevailed in January, prices advancing 1.25c to 2c per pound on the various positions at East St. Louis, and £1 on spot and £5 on futures at London. During the first ten days the market was quiet and London prices receded. There was a sudden increase in demand, in the next ten days with heavy buying done between January 14th and 20th. On some days the market was excited and feverish, manufacturers of war munitions, buying with small regard for prices; the demand was mainly for first quarter shipment, but purchases covered deliveries for the entire year. Railroad embargoes on freight shipments into New England, temporarily increased the pressure for spot metal. On January 25th, large sale of special brands were made for export and the spot price at East St. Louis rose to 19.25c. In the last few days of the month there was a sudden and sharp falling off in buying and prices receded ¹/₂c to ³/₄c per pound. Russia made some purchases, and France and Great Britain put out several large inquiries at the close of the month.

February.

In February, brass founders and other manufacturers of war munitions were the largest buyers. The month began quietly but on the 7th, most of the February and March offerings had been taken up and the demand was extended into April. In the next two days several large export contracts were placed for shipment in the second quarter. By the end of the second week, spot at St. Louis had advanced to 20c per pound. On February 15th, London was greatly excited with an advance of £6 on spot and £3 on futures. In the American market large

sales were made for second quarter delivery and for shipments in six to nine months. The highest prices of the year being touched in the third week. Galvanizers came into the market for moderate amounts on the 21st. Toward the close of the month, the market was unsettled by pressing offerings of high grade metal for resale, but at the close confidence was re-established, the lower offerings being withdrawn. On the last day of the month, spot at London, advanced to £110, the highest price ever touched. The net result of the February movements here, was an advance of 2c on spot and 2.50c on March and second quarter positions.

March.

During the first 13 days of March, there were violent declines but in the following week a buying movement of considerable magnitude developed, during which prices partially recovered the previous loss. A gradual readjustment of the dislocated positions, later, placed the market in a nearly normal condition and on the closing day of the month a confident tone prevailed with the tendency of prices upward. The decline early in the month, was inaugurated by bearish advices from abroad and a speculative drive against the market here. The break in prices at London was sensational, the reaction up to March 13th being £26. The American market, too, had sustained a break of 3.25c to 4.25c per pound. A flood of orders followed the decline and the volume of sales in three days was equal to transactions of three weeks under ordinary conditions. The recovery in prices was 1c to 1.50c per pound at home and £7 to £12 at London. There was greater activity here on the closing day of the month.

April.

In the first half of April, the market was active, strong and buoyant with heavy sales made for export during the first ten days, prices advancing 1 to 2c per pound on all positions. A lull followed and dullness was pronounced just preceeding and immediately following the Government statistical report on April 17th. Domestic consumers remained out of the market during the third week, but producers were not

anxious for orders. Dealers, however, pressed sales on an unwilling market, later bringing about a sharp break that eliminated the previous rise. Galvanizers were ready to buy for May and June shipments on the closing day of the month communicating a steadier tone. It is notable that London advanced £12 on spot and £11 on futures during the month, being unaffected by the reaction in this country.

May.

May proved a disastrous month for the industry. At times dullness was profound and weakness was pronounced. As prices declined the pressure to sell increased. At the end of the month, prices had dropped 4c to 4.25c per pound on prompt and 3.50c to 4c on June to September shipments, while prices for the fourth quarter suffered even more. At this time, domestic prices were the lowest since September, 1915—a period of eight months. The English market also broke £24 to £25 in May, equivalent to 4.80c to 5.00c per pound. At the close of the month, however, London was on a relatively higher basis than was New York or St. Louis. A more cheerful tone developed as the month closed with large buying by home consumers and with exporters knocking at the doors of producers.

June.

Early in June, domestic and foreign consumers were energetically placing orders for nearby positions at steadily advancing prices and although a break occurred at London of £7 to £12 in the first two days, that sent a shiver through the trade, and despite which a large volume of business was transacted in all positions for the year. Buyers suddenly found necessities urgent and entered the market simultaneously with vigor. Producers met the demand at the lower level but gradually advanced prices, stimulating rather than checking the demand. The upward movement culminated June 8th after a rise of $\frac{1}{2}$ c to $\frac{3}{4}$ c per pound when the buying ended as abruptly as it had suddenly begun. The cessation of buying at home was emphasized by a drop of £2 to £5 at London. Concessions of $\frac{1}{2}$ c to $\frac{3}{4}$ c made to re-awaken buyers' interest failed, and dullness prevailed

during the rest of the month, while prices steadily declined to no purpose. The net recession for the month was 2.12½c on spot and 1.50c to 1.75c on future positions. From the highest spot price touched in February, the break was 10c per pound. At London the net drop in June was £19 on spot and £14 on futures.

July.

At the beginning of July, the outlook for the smelters was serious, with wages of operatives and ore prices relatively high, with recovery from the ore smelted reduced to 75% to 80% and with prices steadily declining. With severe loss impending, some of the smaller smelters shut down. The spelter market, weakened by crumbling prices in June and with no support from consumers at home yielded to a strong bear attack launched from abroad. A break of £17 on spot and of £13 on futures occurred at London up to July 11th, the time of greatest depression. In the next two or three days spot sold at 8.50c, July at 8.25c, August at 8.12½c, September at 8c and last quarter at 7.87½c at St. Louis. These prices revealed a drop of 1.87½c per pound on prompt to September shipments inversely from June 30th. The market was in a critical state, when on July 14th a flood of inquiries came from galvanizers but trading was confined within narrow limits, producers being reluctant to sell except at higher prices. Up to July 17th, the English market was still below domestic prices and no export orders were placed, but buying on home account was renewed at rising prices. Foreign buyers came in next day and helped the advance but half of the producers refused to sell until higher prices came with large domestic orders. By July 24th, the home market had recovered 2 to 2.50c on all positions. Europe had bought freely, accelerating this advance but London failed to satisfy all inquiries. A reaction of ¾c to 1c per pound followed, making the net decline for the month ¾c to 1.50c per pound. London recovered sharply and the net decline £1 on spot and £3 on futures.

August.

At the beginning of August, trade was again prostrated. In ten days,

prices had dropped 1c to 1.50c and as consumers as well as producers had suffered grievously from the previous break in prices, both were conservative. Distress was evident in sales at the Metal Exchange made under the hammer. On August 8th, the market had dropped to 8.12½c for prompt, 8c for August and 7.75c for September. October, November, galvanizers buying freely at these prices. Sales of January, February, March were made to other consumers at 7.50c to 7.62½c. In the next 12 days, August 9th to 21st, inclusive, a strong vigorous buying movement was in full swing, prices advancing 1.50c per pound under the heavy orders placed for domestic and foreign account. Sales in single days ranged from 9,000 to 15,000 tons. Feverish buying did not cease until after the 21st. War munition manufacturers and galvanizers were the principal buyers: dealers and operators following. Large producers were the heaviest sellers but small smelters sold more freely on the ascent. In the next few days, prices

Spelter Prices in December.

	New York.	St. Louis.	London.
Day.	Cents.	Cents.	£ s d
1	13.23¾	13.06¼	59 10 0
4	13.05	12.87½	60 0 0
5	12.80	12.62½	58 10 0
6	12.61¼	12.43¾	58 0 0
7	12.05	11.87½	58 0 0
8	12.11¼	11.93¾	58 0 0
11	12.17½	12.00	58 0 0
12	12.17½	12.00	57 0 0
13	12.05	11.87½	57 0 0
14	11.50	11.37½	56 10 0
15	10.92½	10.75	56 10 0
18	10.67½	10.50	55 0 0
19	10.42½	10.25	54 5 0
20	10.30	10.12½	54 5 0
21	10.05	9.87½	54 5 0
22	9.92½	9.75	52 15 0
26	9.92½	9.75	52 15 0
27	9.92½	9.75	51 10 0
28	9.86¼	9.68¾	51 0 0
29	9.92½	9.75	51 0 0
High	13.30	13.12½	60 0 0
Low	9.80	9.62½	51 0 0
Average	11.28½	11.11	55 13 9

declined $\frac{3}{4}c$ to 1c per pound and the market was lifeless during the last few days of the month. London, after violent and wide fluctuations closed with a net decline of £8 on spot and £7 on futures.

September.

Early in September, prime western spelter was dull and easier but a buying movement of a remittent character developed and gained in force as the month progressed. Interest was extended into the first quarter of 1917, and vigorous buying carried prices upward $\frac{3}{4}c$ per pound. Domestic consumers were the first to enter the market, followed by dealers and exporters, creating a great broad market. The movement culminated about September 18th, followed by a week of dullness with recessions of $\frac{3}{8}c$ to $\frac{1}{2}c$ per pound on all positions. In the remaining days of the month there was improved buying that resulted in recovering $\frac{1}{4}c$ per pound. The net result of the business transacted was an average advance of $\frac{3}{4}c$ per pound. The close of the month was quiet but with a more confident undertone. The English market was subjected to frequent rapid and wide fluctuations; the net result being an advance of £3 on futures while spot closed the same as at the end of August.

October.

Excitement attended large dealings during the first week of October and prices advanced generally $\frac{3}{4}c$ to $\frac{7}{8}c$ per pound, followed by recessions of $\frac{5}{8}c$ to $\frac{3}{4}c$ per pound in the ten days following. The decline was inaugurated by German undersea raids on American commerce on the Atlantic coast that created a nervous unsettled market for a week or more, subsequently giving place to a more confident tone and increased activity during which time prices advanced sharply. On the closing day the net advance for the month was 1c to 1.12 $\frac{1}{2}c$ per pound on 1916 shipments and 1.25c per pound on first quarter 1917 positions. The London market, after advancing £5 on spot and £6 on futures from the end of September to October 9th, receded slowly with slight reactions to the end of the month when a net advance of 15s on spot and £4 15s on futures for the month was established.

November.

A strong tone prevailed in November, and prices advanced 2.25c to 2.75c per pound. The rise was due mainly to the increased cost of production which made producers reluctant sellers until late in the month. Consumers, while constantly in the market for nearby shipment found great difficulty in placing orders. Smelters wanted only future contracts and hesitated to book even such business. Export inquiries were few, England and France finding Japan, temporarily, a more promising field for purchasing. Producers' closing prices were the highest of the month but dealers receiving metal against November contracts during the last few days were shading prices for prompt shipment while being careful not to offer future positions. The course of the foreign market was of small importance and of less interest here, while the price of zinc ore steadily advanced in the West. The London market was generally strong and advanced £7 net on all positions during the month.

December.

Early in December, while producers were holding firmly to established prices, dealers persisted in offering to sell at steadily declining prices but without attracting buyers until the 8th, when the market had receded 1c to 1.25c per pound. Then trading interest relieved the market of some of the outside lots pressing for sale, but consumers did not come into the market until the 11th. On the following day, Germany's peace overtures, checked any disposition to trade. On the 13th prices of ore in Joplin declined \$5 to \$10 per ton. During the next two days spelter prices broke 1.25c per pound and the decline continued steadily up to the Christmas holidays when the break was 3 to 3.25c per pound on all positions but very little business was done until December 19th and 20th, when consumers entered the market in competition with dealers and some round lots changed hands. The severe liquidation in securities in Wall Street, and the unsettled political developments abroad engendered a cautious disposition throughout the industry. After Christmas a fair volume of business was transacted with a steadier

tone and some recovery in prices. Some producers, favored by a drop in ore prices, were actively making commitments on future positions, while others confined sales to nearby shipments. The London market declined £8 10s net, on spot, and £9 10s net, on futures during the month.

A member of the trade says as follows:

"The publication of the government statistics for 1916 has had no effect on the market as the figures did not contain any surprises but only confirmed that the increase in the production was what the trade has been expecting. The production showed an increase of 170,000 tons over 1915 and 305,000 tons over 1914 with the capacity available to increase the output by another 100,000 tons this year, if it is shown that this further quantity is required. The statistics showed that the consumption, despite the great strides which have been made in the brass industry, was only 90,000 tons larger than it was in 1915 and only 105,000 tons larger than in 1913, the record years before the war. Where the gain has been is in the export trade which went from 7,783 tons in 1913 to 64,802 tons in 1914, to 132,-

323 tons in 1915, to 210,500 tons in 1916. That proves of what importance the export trade has become through the changes that have taken place in the European zinc industry by the war, and the uncertainty as to how much of this trade we will hold when the war ends, is equalled only by the uncertainty as to when the war will end.

"We will withhold our conjectures as to the probable changes which will take place in spelter with the ending of the war, until the prospects of peace are clearer than they are at present. On the other hand, suppose the war is to continue for another year; the probabilities are that the demands for domestic consumption and the demands for export will not exceed what they were last year, or if they do, not to the extent of the 100,000 tons additional production, that can be supplied if required. Therefore, as there is no shortage of spelter in sight, we believe that the market will not be subject to the erratic price fluctuations that it has in the past two years, but will be more closely in accordance with production costs. Production costs are high at present and may remain high for some time but demand and supply have reached a balance which removed what was hitherto the uncertain element that caused the continual ups and downs in the market. We do not say that spelter is going to stay at one level but we do predict that the fluctuations will be within a much narrower range than they were in either of the past two years."

Sheet Zinc Price Changes.

The following table gives the changes in the price of sheet zinc since January 26, 1916, together with the price of spelter ruling on the same day.

1916—	Sheet Zinc.	Spelter St. Louis.
February 17	25.00	20.87½
April 22	25.50	18.75
May 15	24.50	15.50
May 23	23.50	14.87½
May 29	22.50	14.12½
June 2	21.00	13.12½
June 13	20.00	13.37½
June 20	19.00	12.00
June 27	18.00	11.37½
July 6	17.00	9.37½
July 11	15.00	8.62½
October 26	16.00	10.12½
November 10	17.00	11.12½
November 17	18.00	12.00
November 20	19.00	12.12½
November 24	20.00	12.87½
November 24	21.00	12.87½

Spelter (Monthly Averages.)

	—New York—		—St. Louis—	
	1915.	1916.	1915.	1916.
Jan.	6.52	18.18	6.33	18.01
Feb.	8.86½	20.09	19.92	19.92
Mar.	10.12½	18.09½	9.80	17.91
Apr.	11.51	18.61½	11.22	18.44
May	15.82½	15.93	15.52½	15.75½
June	22.62½	12.80	22.14	12.62
July	20.80	9.70	20.54	9.52½
Aug.	14.45	9.10	14.19	8.92
Sept.	14.49	9.23½	14.10½	9.06
Oct.	14.07	10.01	13.89	9.83½
Nov.	17.04	11.92½	16.87½	11.75
Dec.	16.91	11.285	16.72	11.01½
Average	14.44	13.75	14.16	13.57

Joplin Zinc and Lead Ore Market in 1916.

The month of December broke all previous records in the shipment of zinc blende ores, as compared with the previous months of the year, total of 44,404 tons being shipped out, even in the face of bad weather conditions. The shipments made during November and December in conjunction with the bad power conditions reduced the surplus stock from 10,590 tons at end of October to 1,500 tons at the end of the year. As compared with previous months of the year, no other month except that of April anywhere near approached it. The month of April shipped out 53,747 tons of blende, while of calamine 4,080 tons were delivered. This compared with 4,404 tons of blende and 4,276 tons of calamine in December. The April valuation owing to the high prices paid for zinc ores during that portion of the year. The month of December opened with prices extremely strong, the base range reaching \$115 for a few lots while ore sold at from \$105 to \$110. As the month wore on, priced gradually sagged downward and under the impetus of the peace negotiation rumors, slumped heavily the last two weeks of the month, closing at from \$70 to \$80 per ton. The first three weeks of the month, under the stimulus of the high prices paid for blende resulted in some record shipments being made, the average being close to 10,000 tons per week. At the end of the month, neither buyers or producers were anxious to trade. The average weekly shipment for the entire month was 8,881 tons and the prices averaged \$87.26 per ton.

The month of December also showed very heavy shipments of calamine ores, the total being 4,376 tons, averaging \$51.95 per ton. These are the heaviest shipments of calamine for the entire year.

The month of December showed very heavy shipments of calamine ores, the total being 4,376 tons, averaging \$51.95 per ton. These are the heaviest

shipments of calamine for the entire year.

The month of December showed some very changeable conditions. Usually this month is one with open weather conditions, but this year saw the extremes of cold come upon the district the middle of the month, running temperatures down below zero, catching the operators wholly unprepared, and created considerable havoc, even where ordinarily protection is fairly well established. Small producers were entirely thrown out of the productive list.

On top of these bad weather conditions, were additional power difficulties brought about by the burning of two of the Empire District Electric Power Company's largest turbines at the large hydro-electric plant on Spring River. As the company already had two of its turbines in the process of repair and replacement, the loss of these two turbines completely paralyzed electric power driven plants and caused a general shut-down through the entire field. This not only affected milling operations, but many of the heavy pumping problems of the field have been attacked by pumps driven by electric power, and power being unavailable, has resulted in some of the mines being unable to keep their water down. This was especially so in the Oklahoma field. On top of these conditions came extremely warm weather, thawing out the frozen roads and then a downpour of rain.

This has made the roads almost impassable in portions of the Oklahoma field and has seriously impeded the delivery of ores to the cars and coal to the plants. In the face of these conditions it is remarkable that shipments of ore have been so large. All of these conditions acting together have resulted in a great reduction of surplus stocks.

Lead ores were closely following the trend of zinc ores all month, both in regards to demand and shipment. Prices

were also much stronger and shipments of lead in December were greater than any month except April, and were higher than any previous months, except March, April and May. Owing to the heavy shipments of December, surplus stocks were greatly reduced, the year closing with 400 tons of stock in the bins of the producers. The prices ranged from \$85 to \$105, and the average for the month was \$91.70, with a total shipment of 5,826 tons for the five weeks of the month.

Tables are herewith appended showing the blende, calamine and lead ore shipments, prices, values and surplus stocks for 1916 for each month of the year, also with totals and averages for the year. The year of 1916 has broken all records both as to production and value for all three ores. The total output of blende for 1916, was 349,690 tons, which was 56,317 tons more than 1915 in tonnage. The value of the ore shipped was \$29,693,214 and was \$6,814,219 greater in value than the 1915 production. The average price paid for blende ores for the year was \$84.91 which was \$6.93 greater than the average for 1915.

The total output of calamine was 29,779 tons, which was 8,210 greater than the output in 1915. The average price paid for the ores was \$59.54, which was \$8.98 greater than the 1915 average price. The total valuation of calamine was \$1,773,118 which was \$682,597 greater than the value of the 1915 production.

The output of lead ores was 53,326 tons in 1916, which compares with 46,035 in 1915. The 1916 valuation for lead ore was \$4,488,986, as compared with \$2,514,313 in 1915, which made the average price \$29.56 greater in 1916 than in 1915.

It is a notable fact that the year

closes with practically no surplus stocks of any class of ore, being the smallest recorded for the entire year for zinc and among the smallest of any month for lead.

The high prices paid for zinc ores has resulted in the development of large areas of virgin territory and has added many thousands of acres to the known reserves of the Joplin district. No period in the history of the industry has ever shown such a wide prospecting development campaign as has been waged during the past year. Many operators believe that the amount of developed territory brought in within the last ten months is not only the richest ever developed in the Joplin district, but in extent and proved tonnage, is greater than the entire known field up to 1914. It has brought the attention of some of the largest mining concerns in the world to the new district and has started one of the greatest prospecting campaigns known in the history of any mining camp in the United States. There are portions of Ottawa County, Kansas, Ioma, and Cherokee County, Kansas, which more nearly resembles the feverish activity of an oil field with its multitude of drills than any metalliferous camp. There are at least a thousand to fifteen hundred drill rigs stretched from Cardin, Oklahoma to Waco, Kansas, and prospectors are advertising for fifteen hundred more drill rigs.

It is from the mining activities of these new fields that much of the increased production has been derived. It would not be surprising if in 1917 these new camps produced as great an output as all of the remainder of the district combined, a fact that would have been ridiculed 12 months ago. It is now not only a possibility, but a very great likelihood.

¶ For statistics of Shipments, Prices, Values and Surplus Stocks, see next page.

Blende Ore Shipments, Prices, Values and Surplus Stocks for 1916.

Date 1916.	Tons.	Average Prices.	Values	Surplus stock. End month.
January	26,126	\$ 99.82	\$2,608,002	4,000
February	27,465	108.90	2,991,309	3,000
March	24,924	99.10	2,470,298	10,465
April	43,747	106.45	4,658,014	8,200
May	26,840	90.14	2,419,382	17,190
June	26,077	74.26	1,936,485	23,650
July	26,947	67.72	1,825,050	32,250
August	16,147	59.11	954,477	32,230
September	31,074	56.60	1,758,711	18,820
October	27,679	64.34	1,780,830	10,590
November	28,260	85.41	2,415,729	3,945
December	44,404	87.26	3,874,927	1,500
Total	349,690	\$84.91	\$29,693,214	1,500

Lead Ore Shipments, Prices, Values, and Surplus Stocks for 1916.

Date 1916.	Tons.	Average Prices.	Values	Surplus stock. End month.
January	3,781	\$ 75.69	\$286,153	1,435
February	4,218	84.00	354,510	1,100
March	5,331	92.37	491,108	635
April	6,333	100.44	635,944	750
May	4,407	95.51	420,920	1,200
June	3,872	81.30	314,745	2,000
July	4,392	73.20	321,802	2,680
August	2,841	65.50	186,122	2,550
September	4,655	67.90	316,406	1,130
October	4,253	78.00	331,769	85
November	3,417	86.41	295,277	370
December	5,826	91.70	534,230	400
Total	53,326	\$84.18	\$4,488,986	400

Calamine Shipments, Prices, Values and Surplus Stocks for 1916.

1916—	Tons.	Average Prices.	Values.
January	1,343	74.17	99,617
February	2,860	75.82	216,851
March	2,252	73.61	165,782
April	4,080	81.62	333,041
May	2,487	64.16	159,569
June	2,160	53.57	115,724
July	925	46.26	42,796
August	1,322	40.23	53,192
September	2,907	42.12	122,445
October	1,848	39.68	73,328
November	3,319	50.80	168,630
December	4,276	51.95	222,143
Total	29,779	59.54	1,773,118

Lead in 1916.

**Export Orders the Chief Factor in Price Advances and Declines
Throughout the Year—Net Advance for Year 2.30c Per
Pound—Trust Influence the Cause of Narrow
Range of Fluctuations.**

Animation and prosperity in the lead industry during the first quarter of 1916, was due mainly to the heavy buying for export to Russia and Japan, and to the purchases by domestic manufacturers of shrapnel. Under this stimulus prices advanced sharply in the open market from 5.45c, at the beginning of the year, to 8.25c per pound St. Louis on March 22nd, when the rise culminated. During the same quarter, the American Smelting & Refining Company announced a series of advances in official prices, from 5.50c, when the year opened, to 7.50c New York, on March 30th. On this date, independent producers had receded to 8.00c East St. Louis.

The withdrawal of large export inquiries early in April, inaugurated a long period of recession; prices in the open market declining without important reactions until August, when the industry was much depressed, with keen competition for orders among various selling interests. On August 10th, when the St. Louis market had dropped to 5.75c—a decline of $2\frac{1}{2}$ c per pound or \$50 per ton from the high level attained in March—large export buying was resumed; the Russian government alone, taking 4,000 tons. Other foreign orders, including those from Canada, helped the upward movement in the next few months; the demand from the Orient was especially encouraging.

The American Smelting & Refining Company, that had slowly followed the decline during June and July, receded to 6.00c New York on August 2nd, but when the tide turned the Trust announced two advances in August, two in September and a double advance in December.

The open market was more sensitive to developments and prices were rapidly advanced from 5.75c on August 10th to 7.75c and 8.00c in December with a

recession to 7.75c in the closing week of the year; but at no time did the Trust price rise above 7.50c per pound. The extreme fluctuation in the open market during the year was $2\frac{1}{2}$ c per pound, or \$50 per ton, while the net advance from January 1st to December 31st, was 2.30c per pound, or \$46 per ton. The restricting influence of the Trust, kept the official changes within a range of 2c per pound or \$40 per ton.

January.

In January all of the producers were sold far into the future and with current output applied on contracts, the supply for the open market was light. Not a few domestic consumers, expecting to buy later at lower prices had been buying from hand-to-mouth for several months. Efforts of such melters to cover requirements, helped the upward movement. Export demand was active throughout the month with large sales made to Europe and to Russia as well as to Japan. At times, the domestic market was unsettled by second hands seeking orders at concessions from Trust price, but with large producers' output sold for months ahead, outside lots generally were readily taken up. The action of the British government to control trading at home and to insure ample supplies for war munitions, at first caused a break in prices but the decline was subsequently recovered and a further advance was established.

February.

Throughout February, the market was active and strong with large domestic and foreign contracts placed at higher prices. The Trust price was advanced 15 points on the 9th, and five points on the 16th, to 6.30c per pound, but in the open market prices went up 20 points more, sales being reported at 6.50c when the month ended. Late in February, also, export sales were made at 6.50c for shipment to the Far East.

Spot lead was so scarce at London that the English export trade was almost suspended because of the difficulty in securing permits to make shipments.

March.

Activity, strength and buoyancy marked dealings during the greater part of March, while at times excitement ran high in the western field, where belated consumers were compelled to compete with dealers for supplies. The volume of business would have been heavier had the metal been available. The American Smelting & Refining Company advanced prices four times during this month; ten points on March 3rd; 20 points on March 7th and 40 points on March 14th, and 50 points on March 30th, making the total advance for the month \$24 per ton. Independent producers, however, constantly made sales at \$2 to \$10 per ton above the Trust quotations, transactions being reported at 8.00c to 8.50c per pound, in the open market at St. Louis, during the latter part of the month. One of the main causes for the exceptionally high prices was the extraordinary demand for export to the Orient; about 5,000 to 6,000 tons being sold for prompt, March and early April shipment to Japan and to Russia. Most of these shipments were made by rail to Pacific coast and thence by water to their destination. At the close of March a slightly easier tone prevailed and the net result of the changes was an advance of $1\frac{1}{2}$ c to $1\frac{3}{4}$ c per pound in the domestic market, and £2 at London.

April.

In April, a sharp reaction was caused by the withdrawal of large export inquiries; the break in prices being $\frac{1}{2}$ c to $\frac{3}{4}$ c, with the decline progressive, throughout the month. The outside market dropped slightly below the Trust price late in the month, the difference at one time being 1c per pound. The St. Louis market was unsettled but was somewhat firmer when the month closed.

May.

The American Smelting & Refining Company tenaciously held to its official price of 7.50c New York, and 7.42 $\frac{1}{2}$ c East St. Louis throughout May, and

was supported in this position by independent producers, who until late in that month, made light of reselling by consumers, and of concessions of several dollars per ton under the Trust price, made by dealers. When May closed, there was a change in tone and some producers were seeking business at concessions but largest interests gave no sign of distress and continued to take business on an average scale basis. In meantime prices in the open market fluctuated from $\frac{1}{2}$ c above to .30c below the Trust level. The lowest point touched was at the end of the month. The English market receded £2 10s to £3 before the close of May.

June.

June transactions were unsatisfactory and the undertone of the market was weak. On the 3rd, the American Smelting & Refining Company recognized officially, the changed trade conditions by reducing the price \$10 per ton; that is, to 7.00c New York, and 6.92 $\frac{1}{2}$ c at East St. Louis; having booked orders on the day previous at a decline of $\frac{1}{2}$ c per pound. The lower price

Lead Prices in December.

Day.	New York*	St. Louis.	London.	
	Cents.	Cents.	£	s d
1	7.37 $\frac{1}{2}$	7.25	30	10 0
4	7.43 $\frac{3}{4}$	7.31 $\frac{1}{4}$	30	10 0
5	7.62 $\frac{1}{2}$	7.50	30	10 0
6	7.68 $\frac{3}{4}$	7.56 $\frac{1}{4}$	30	10 0
7	7.87 $\frac{1}{2}$	7.62 $\frac{1}{2}$	30	10 0
8	7.87 $\frac{1}{2}$	7.62 $\frac{1}{2}$	30	10 0
11	7.87 $\frac{1}{2}$	7.75	30	10 0
12	7.90	7.85	30	10 0
13	7.81 $\frac{1}{4}$	7.75	30	10 0
14	7.81 $\frac{1}{4}$	7.75	30	10 0
15	7.75	7.62 $\frac{1}{2}$	30	10 0
18	7.68 $\frac{3}{4}$	7.56 $\frac{1}{4}$	30	10 0
19	7.68 $\frac{3}{4}$	7.56 $\frac{1}{4}$	30	10 0
20	7.68 $\frac{3}{4}$	7.56 $\frac{1}{4}$	30	10 0
21	7.62 $\frac{1}{2}$	7.50	30	10 0
22	7.56 $\frac{1}{4}$	7.35	30	10 0
26	7.56 $\frac{1}{4}$	7.35	30	10 0
27	7.56 $\frac{1}{4}$	7.35	30	10 0
28	7.56 $\frac{1}{4}$	7.35	30	10 0
29	7.56 $\frac{1}{4}$	7.35	30	10 0
High	8.00	8.00	30	10 0
Low	7.25	7.20	30	10 0
Average	7.68	7.52	30	10 0

* Outside market.

however, only served to unsettle buyers and second hands offered concessions at five to ten points without securing important orders. Increased pressure to sell was made as the month progressed, resulting on the 12th in sales of a large tonnage at 6.80c per pound; this being \$4 under the Trust price and \$1 to \$2 below the asking prices of most independent producers. Most of the small current business went to outside operators but orders were not sufficient to sustain the market even at 6.60c to 6.70c per pound East St. Louis for spot, June and July shipments. The Mexican situation further unsettled the market but on the 21st, large sales of prompt and June shipment were reported made by independent producers at 6.70c to 6.80c per pound delivered in the East. From this time on, the market was firmer and at the close of June, independent producers were selling desilverized at 6.90c to 6.95c and Soft Missouri at 6.80c to 6.90c New York, while the Trust price remained 7.00c per pound. The result of the fluctuations in June was a net decline of $\frac{3}{8}$ c to $\frac{1}{2}$ c per pound, at home, while the London market declined £3 on spot and £4 on futures.

July.

Early in July, prices in the open market advanced five to ten points, to the Trust level, with sales of several thousand ton lots, but, unexpectedly on July 5th, the American Smelting & Refining Company reduced its official price $\frac{1}{2}$ c per pound to 6.50c, New York and 6.42 $\frac{1}{2}$ c East St. Louis. Independent producers immediately became aggressive for business, but consumers and dealers anticipating a further decline, waited. About the middle of the month munition manufacturers bought 3,000 to 4,000 tons of lead at 6.10c to 6.12 $\frac{1}{2}$ c East St. Louis for July-August shipment, and smaller orders were taken on the 19th, at the same price, but by the end of the month, spot and August shipments had receded to 6.00c, with September at 5.90c per pound East St. Louis. The decline for the month was .92 $\frac{1}{2}$ points, equal to \$18.50 per ton. The London market's net decline during July, was only 5s on spot and £1 on futures.

August.

At the beginning of August, the market was heavy and weak with independent interests courting buyers, when on the 2nd, the Trust, recognizing conditions, reduced its prices $\frac{1}{2}$ c to 6.00c New York, and 5.92 $\frac{1}{2}$ c East St. Louis. Independent producers met the action of the Trust by making further concessions of \$1 to \$2 per ton without securing much business, but in the second week, consumers who came into the market were able to buy at 5.75c for spot and August, because of the keen competition for orders among producers. A quick change for the better occurred on the 10th, when large export contracts were placed. Domestic consumers also bought more freely and prices recovered \$1 to \$2 per ton. The demand continuing active, the market rose above the Trust level, prompting the largest interest, on August 17th, to advance the price \$5 per ton to 6.25c, New York; and, following the buying of 4,000 tons by the Russian government from independent producers, the Trust, on the next day, announced another advance of \$5 per ton to 6.50c, New York. The large foreign orders stimulated buying by domestic consumers and dealers. Before the end of the third week producers' capacity for August-September had been sold. In response to the United States government inquiry for 300,000 pounds of lead for the Frankfort Arsenal, 6.72 $\frac{1}{2}$ c was bid on August 21st, and on the same day, sales were made in the open market at 5.75c for August and September shipment, being \$5 per ton higher than the Trust price. Buying slackened in the next week and with unfavorable political developments, and freer offerings, an easier tone developed; spot being offered at 6.50c East St. Louis on the closing day of the month. The English market during August advanced £2 15s on spot and £3 2s 6d on futures.

September.

In September a large business in the aggregate was transacted and the market steadily gained strength as the month progressed. Large export orders mainly from Canada and from Japan were supplemented with domestic buying by consumers. The increased

activity resulted in an advance of $\frac{1}{2}$ c per pound or \$10 per ton, announced by the Trust on September 15th and 19th to 7.00c New York, with a further rise of \$2 to \$3 per ton in the open market by the close of the month. Most of the buying for the Dominion was by manufacturers of shrapnel, and Japanese purchases were also made by manufacturers of war munitions. At London, the net advance in September was 15s on spot and 7s 6d on futures.

October.

There was less animation in October, but the high prices established in September were well sustained. Current production, which was liberal, went rapidly into consumption, there being no evidence of surplus stocks in either the hands of producers or of consumers. The outside market remained firm with no important fluctuations and the American Smelting & Refining Company made no change in its official base. The German submarine raid that unsettled other metals had no effect upon lead. Large shipments were made to Russia on previous contracts and there was renewed demand for export to the Orient. Some few sales were made but not much lead was now available for shipment in the balance of 1916. In the last week of the month, there was a more ample supply to meet the demand for prompt and November shipment, but there was no important accumulation. London declined £1 10s on spot and £1 on futures during October.

November.

A strong but quiet market was experienced during the first half of November. On the 17th, activity suddenly developed at New York and at St. Louis, with prices higher in the open market. Considerable business was transacted in the following ten days for January-February-March shipment. Predictions that the official price of the American Smelting & Refining Company would be sharply advanced were constantly made, but no action was taken in this respect. Some export business, mainly for shipment to Japan, was quietly done in the West, but details were not disclosed. An advance of $\frac{1}{4}$ c to $\frac{1}{2}$ c per pound was secured by out-

side interests during the month, and the market closed dull and somewhat unsettled at 7.20c St. Louis and 7.37 $\frac{1}{2}$ c New York. For military reasons, the English market was fixed at £39 10s for spot and £29 10s for futures on October 6th, and so remained throughout November.

December.

At the beginning of December, the market was somewhat unsettled although a strong tone prevailed with a scarcity of nearby metal. Producers were well sold for December and there were few if any offerings under 7.50c per pound, New York, $\frac{1}{2}$ c per pound above the Trust price. On the 5th, the American Smelting & Refining Company announced an advance of $\frac{1}{4}$ c to 7.25c New York, which was quickly followed by a second announcement "after reconsideration" of an advance

Lead (Monthly Averages.)

	—New York*—			—St. Louis—		
	1914.	1915.	1916.	1914.	1915.	1916.
Jan.	4.11	3.74	5.94	3.99 $\frac{1}{2}$	3.57	5.80
Feb.	4.06	3.82	6.23	3.95	3.72	6.17
Mar.	3.97	4.03	6.83	3.80	3.98	7.46
Apr.	3.82	4.19	7.50	3.70	4.11	7.67
May	3.90	4.23 $\frac{1}{2}$	7.50	3.81	4.16	7.28
June	3.90	5.86	7.04	3.80	5.76	6.77
July	3.90	5.74	6.52	3.75	5.52	6.20
Aug.	9.30	4.75	6.27	3.73 $\frac{1}{2}$	4.59	6.27
Sep.	3.86	4.62	6.75	3.67	4.53	6.71
Oct.	3.54	4.59 $\frac{1}{2}$	7.00	3.39	4.51	6.97 $\frac{1}{2}$
Nov.	3.68	5.15	7.00	3.58	5.07	6.95
Dec.	3.80	5.34 $\frac{1}{2}$	7.68	3.67	5.26 $\frac{1}{2}$	7.53
Av.	3.87	4.67 $\frac{1}{2}$	6.92	3.74	4.57	6.80

* Trust price

Waterbury Spelter Averages.

	1912.	1913.	1914.	1915.	1916.
Jan.	6.78	7.56	5.54	6.55	22.25
Feb.	6.85	6.81	5.70	11.85	22.70
Mar.	7.17	6.56	5.59	12.15	23.15
April	7.07	6.08	5.50	13.85	23.20
May	7.13	5.77	5.38	20.55	21.20
June	7.25	5.50	5.37	25.60	17.40
July	7.46	5.61	5.26	24.90	15.20
Aug.	7.34	5.99	5.66	19.30	13.60
Sept.	7.72	6.13	5.91	17.85	13.70
Oct.	7.83	5.74	5.23	16.85	12.95
Nov.	7.74	5.60	5.38	19.36	14.10
Dec.	7.65	5.44	5.90	21.15	13.20
Av'ge	7.33	6.06 $\frac{1}{2}$	5.53 $\frac{1}{2}$	17.50	17.72

to 7.50c N. Y., for prompt shipment from the West. This action encouraged independent producers to hold out for 7.75c New York, for late January and early February shipments. In the second week scarcity was more pronounced and some small lots available, were held at close to 8.00c per pound New York. On the 13th, however, freer offerings by second hands developed an easier feeling and buyers withdrew. Later, several 100 ton lots sold at 7.75c per pound at New York. In the third week, dealers, more anxious to sell, were shad-

ing producers' asking prices without securing much business. The market withstood well, the shock of the German peace overtures, due to the firm stand of the largest interests at a critical time. In the last week of the year, the scarcity of supplies in the East caused premiums to be asked and paid and earload lots sold at 7.75c per pound. The delay in shipments from the West emphasized the scarcity of spot metal and consumers' purchases of futures in the last two business days of the year was an encouraging development.

Antimony in 1916.

Sensational and Dramatic Advances and Declines the Outstanding Feature of the Year—Record High Price of 45c Per Pound Established in February—Later Receding to 10.50c, A Range of 34½c!

Developments in the antimony trade, in 1916, were highly dramatic. The rises and falls in prices were sensational. Months of excitement and activity alternated with long periods of profound depression. Fortunes were made and lost with equal facility.

A strong tone prevailed throughout the first quarter and prices advanced to the maximum level in the history of the industry, spot selling at 45c per pound, late in February, and during the last ten days of March. The pressing needs of manufacturers of war munitions and the movements of antimony-laden vessels afloat from the Orient, were the main factors governing future prices. At times, a large business was done in cargoes afloat and for later shipment from China and Japan for domestic and foreign account. There was almost a famine in spot supplies in January and small relief in February, but by late March the shortage was even more keenly felt because of the delay in shipments from the Orient via the Pacific Coast, due to freight congestion and railroad embargoes resulting therefrom.

A radical change swept over the trade in the second quarter inaugurated by a break of 6.00c to 7.00c per pound in April because of a light demand from manufacturers of war munitions and other domestic consumers, in conjunc-

tion with larger arrivals from the Orient. An even more serious collapse was suffered in May, when prices broke 14c per pound. The break from the high level in March was 21c per pound. The drop in prices for future shipments was 10c per pound. Temporarily, operators and speculators were panic stricken. The continued absence of shrapnel orders increased the depression in June, and prices again yielded in a drop of 8c to 10c per pound more. Freer offerings to America from the Orient, at this time were attributed to the cancellation of large Russian contracts in Japan.

Liquidation of speculative holdings continued with more or less vigor throughout the third quarter of the year. In July, the drop in spot prices was 4½c per pound and the market was unsettled and depressed. In August, large amounts were sacrificed, spot prices dropping to 10½c, the lowest of the year, but some foreign shrapnel orders about the middle of the month, checked the precipitous decline and caused a revival in trading in nearby positions with a partial recovery in prices with some excitement. The improvement was fleeting, however, and the market was again heavy and depressed in September, prices receding 1½c to 1¼c per pound.

In the last quarter of the year a

stronger and more confident tone prevailed, prices recovering between 3c and 4c per pound, under the influence of more war munition orders. Large sales were made in October, to Canadian shrapnel makers for nearby, and for shipment from the Far East. In November, there was greater activity and a further rise in prices, with some excitement attending the placing of large contracts between the 20th and 24th. In December, an easier tone resulted from the release of 1914 orders long held up because of British embargoes. There was less doing and freer offerings of future deliveries at concessions, when the year closed.

January.

Light stocks of antimony at the beginning of 1916, quickly developed into famine-like conditions with price fluctuations ranging between 1c to 2c per pound, and a good demand experienced for future positions. Relief came on the 11th, with arrivals of steamships, when round lots of spot sold at 41.50c to 42c; January at 40.50c to 41.00c. A few days of dulness were succeeded by sales of 100 ton lots, ex steamship, due in February, at 34c in bond, while American metal sold at 34.50c for February-March shipment. Freight congestion, later, caused spot to advance to 43.00c to 43.50c, while guaranteed February deliveries rose to 38.50c, free of duty. At the close of the month, the market was strong and active with heavy sales of all positions.

February.

A confident tone, with less activity; spot metal difficult to buy under 43.50c and American metal unobtainable were the features during the first week of February. On the 7th, liberal sales of February-March shipments from the Orient were made at 33.50c in bond. On the 9th, the action of the British Consul at New York, in refusing to release importations until convinced that the metal would go into direct consumption—importers being compelled not only to give names of buyers but to guarantee that the metal would not be exported—caused confusion in the trade. On the next day, spot was sold in small quantities at 44.00c. About the middle of the month, large sales were

made to manufacturers of munitions and also to other large consumers. By the 23rd, supplies in dealers' hands were lessened notwithstanding large arrivals while in the last few days of the month, sales of American antimony were made at 41.50c to 42c, March delivery, with renewed buying of shipments from Japan at 37.50c duty paid. The close was strong with fewer offerings of future positions.

March.

A fair volume of business was transacted at the beginning of March in February-March shipments that was followed by dulness in the second week. Some quiet orders placed by domestic consumers and a large inquiry from Russia by the middle of the month, developed an acute shortage of metal from delay in arrivals of steamships, overdue. An advance to 45.00c for spot resulted on March 20th. Later, freer offerings were made at only fractional concessions. On the 27th, a Canadian manufacturer of munitions placed an order for 500 tons. The English market maintained an even tenor at £95 throughout the month, although spot, in small lots in the open market sold at £125.

April.

Light demand, combined with large domestic and foreign arrivals, caused a break in prices of 6c to 7c on spot and of 5c to 6c per pound on nearby futures, early in April. As the month progressed, the demand called for only small lots and the spread between prices of spot and future positions increased, ranging from 5c to 10c for a time. On the 10th, spot was down to 42.50c; April to 39.50c; May to 37.50c, duty paid. By the middle of the month, larger arrivals came upon a lifeless market that failed to respond even to greater concessions in prices. On April 26th, some large sales of May-June shipments from the Orient were made at 30c in bond. In the next few days, lower prices were in force, the market closing heavy and weak with sales at 37.50c for prompt shipment.

May.

A dearth of war orders and financial panic were the contributing factors that caused prices seriously to collapse in May. Spot metal—Oriental and Ameri-

can—broke 14c from the end of April to the end of May, and 31c from the highest point of record for the industry at the close of March. Wholesale lots of spot were quoted at 24.00c per pound, and dismay reigned in the market that up to the very close of May increased in weakness with prices receding.

June.

The continued absence of ammunition orders, in June caused the market to be dull with only the ordinary pre-war conditions—demand for jobbing lots—to relieve the monotony of the downward trend in prices which resulted at the close of June in offerings of spot at 16.50c per pound, in small lots, from a congested and depressed market.

July, August.

The drop in prices continued in July, although at a less rapid rate than in the preceding two months. The disappointment that resulted from the lack of anticipated large orders from munition manufacturers was painful and stocks accumulated. Competition for business among importers was keen. Jobbing lots were almost unsaleable at 16.00c per pound although immediately following Independence Day, a few fair sized orders were placed. By the middle of July, small jobbing lots sold at 14.50c, duty paid; a little later, 400 tons were sold at 11.50c in bond for prompt-July-August shipment to a manufacturer of ammunition. At the close of the month, small lots were available at 12.50c to 13.00c while round lots could have been obtained at 11.00c to 12.00c per pound. An interesting fact, brought out in the New York Custom House report, was the shrinkage of over 62½% in the value of antimony stored in bonded warehouses, disclosing the enormous loss suffered by the trade from market depreciation. Continued liquidation of speculative holdings during the first week in August, caused further depression and serious loss, and by the 4th, a decline of 1½c from the July closing had occurred. The mining of antimony in Nevada had ceased as it cannot be continued profitably when the price falls below 25c per pound. On the 9th, 25 ton lots, prompt, were offered under 10.75c. Next day, the distribu-

tion of ammunition orders by the Allied Governments spread the hope that shrapnel would be purchased creating a demand for antimony, and on the 15th, for the first time in two months, a few orders were placed. Large consumers and trading interests promptly entered the market buying up all the cheap lots obtainable for August-September-October shipments at 9.00c to 9.50c per pound, and the market quickly recovered on all positions rising to 10.50c to 11.00c per pound. On the 17th, importers withdrew as sellers, upon the report that the Bethlehem Steel Company had purchased 1,000 tons with purchases by other manufacturers amounting to 500 tons. When the week closed 2,000 tons had been disposed of and an advance of 4c to 5c per pound was in force with the largest sellers asking 16.00c per pound. A period of waiting followed, with a decline in price, consumers buying at 13.50c to 14.50c for prompt and September shipments. Dulness then set in and on the closing day the spot price had receded to 12.50c per pound which was only ½c above the July closing. Imports of the metal in June were the highest of record, and the value in bond was equivalent to 29.00c per pound.

September.

Throughout September the market was heavy and dull with a drop of 1c to 1½c per pound on round lots in bond. On the 18th, the jobbing demand improved and some interest in wholesale lots developed. On the 21st, Canadian buyers were offered November-December shipments at 10.50c and following this, orders were placed for several large lots at 9.50c in bond for September-October shipment from Canada.

October.

A quiet and easy market ensued in October, until the 4th, when an active demand for round lots in bond developed, resulting in sales of November and October shipments at 9.50c to 9.75c per pound. On the next day, large sales were made to munition manufacturers at 10.00c in bond for last quarter 1916 shipment. Small lots sold at 11.50c duty paid. A stronger tone was developed and a fractional advance re-

sulted with additional sales of round lots at 10.50c for prompt and for October-November shipments. Most of the metal sold was for export to Canada, sales amounting to between 2,500 and 3,000 tons. On the 16th, 12.00c in bond for shipment from China and Japan in 30 days, was paid, while jobbing lots sold at 13.12½c to 13.25c. In the last week, an easier tone developed with a fractional recession in shipments from the Orient. The close was dull with lower prices for quick shipment.

November.

Munition orders from manufacturers of shrapnel were a boon to importers in November, carrying prices upward 1c to 1½c per pound; also, there was a better jobbing trade from domestic consumers. On the 3rd, small sales of several lots at 11.25c were made, followed by liberal sales at a fractional advance; 500 to 600 tons in all, the largest sales being made to Canadian manufacturers although there was some quiet buying on American account. After the middle of the month shrapnel manufacturers again placed contracts at 11.87½c in bond. By the 22nd, continued buy-

ing carried prices to 12.50c in bond. By the 24th, shrapnel manufacturers were satisfied and dullness prevailed throughout the remainder of the month.

December.

December opened with Chinese and Japanese quoted at 14.50c, with an easier tone resulting from the release of 1914 orders that had long been held up by England on account of British embargoes placed at the beginning of the war; indicating that England now feels comfortably fixed in regard to antimony. A difference of £25 per ton exists between the controlled British market and the open market for Chinese and Japanese. Late on the 8th, carload lots, duty paid, sold at 14c. By the 18th, an easier tone for futures resulted. Spot was quoted at 13.00c in bond, and January-February shipments from the Orient were offered at 12c. Peace overtures had no apparent effect, although antimony is largely used in the making of munitions. The year closed with some cheaper offerings for future delivery; January being quoted at 11.50c, c. i. f. New York, in bond.

Aluminum in 1916.

**Net Advance for the Year 6c to 9c Per Pound—Range of Fluctuations
14c Per Pound—Export Demand the Main Factor—Increase in
Foreign and Domestic Consumption Estimated at 20%.**

The demand upon the aluminum factories of America in 1916, was even greater than in 1915, the increase in domestic and foreign consumption being estimated at 20%, compared with the preceding year. On the other hand, it is understood that there was a modest gain in output but the increase fell far short of expectations because of delay in new construction, due to shortage of labor, traffic congestion and to local causes. Several independent reduction and smelting plants are pushing work on new aluminum plants and the Aluminum Company of America expects to have its North Carolina works ready for operation in March. The latter plant will have a rated capacity of 40,000,000 pounds per year. The independent plants will add about 15,-

000,000 to 20,000,000 pounds to present capacity, in the course of a few months.

Importations of foreign aluminum in 1916, because of the European war, were insignificant. In ordinary times about 30,000,000 pounds a year, are received from abroad, but instead of obtaining a supplementary supply in the past two years, the United States has been called upon to share its output with foreign countries, especially with the Entente Allies. Early in the fall of 1916, as in the autumn of 1915, the British Government purchased 8,000,000 to 10,000,000 pounds from the largest American interest for shipment in the last quarter of 1916, and in the first quarter of 1917. Earlier in the year, some substantial shipments were made to Russia and to Italy as well as to

Great Britain. There was also a demand for aluminum for shipment to Scandinavia but some such exports were captured by the English navy, the claim being made that the metal was designed for Germany.

The strength of the home market throughout the year was derived largely from the urgency of the export demand, although this fact was not always apparent upon the surface. France, that usually has a surplus of aluminum made almost no exports in 1916, aside from assisting her Allies to meet their war munition requirements.

The inadequate supplies available in 1916, to meet the extraordinary domestic and foreign demand was responsible for a net advance of 6 to 9c per pound in the price of No. 1 Virgin ingots, in the New York market while the fluctuations between the highest and the lowest points touched during the year covered a range of 14c. The lowest price, 53c, was current late in January and early in February, while the highest price of the year, and for all previous periods, 67c per pound, was reached in October. These were the prices current in the open market. It is notable, however, that producers' contract prices for ingots to be shipped in 1917 were 35 to 37c per pound; second hands' prices to dealers ranged from 55 to 60c, and dealers' prices to consumers ranged from 60 to 66c per pound, according to conditions, terms and times of shipment. In exceptional instances prices were slightly under or slightly over this range.

January, February, March.

In January, there was evidence that consumption continued at maximum rate and that large profits were being made by producing interests; but while a strong tone prevailed, buying was of small proportions. Toward the middle of the month there was some indication of a more ample supply and the market was slightly easier, when spot was held at 55c with few buyers willing to pay over 53c, and these were the prices current at the close of the month as well as early in February; but, as the month progressed it became evident that the supply in the open market was short of the demand, resulting in a sharp advance of 7 to 8c per pound. At the

close of the month sales of car lots were made at 62c and small lots sold at 63c per pound. In March a more ample supply, freer offerings—the higher prices bringing out hitherto invisible supplies—and a less active demand resulted in a reaction of 2c per pound. A fair business was done with domestic consumers later in the month followed by some days of dullness.

April, May.

Throughout April and May there was a lack of animation and an easier tone with prices 1 to 2c lower than in March. The main feature of interest in May was the selling for 1917 shipment by the Aluminum Company of America, at 35c for ingots at the smelters, while rolling mills sold sheets at 40c base f.o.b. mill. The outside market, however, was dull during the entire month.

June.

Early in June an improved demand from domestic consumers was experienced and some sales were made for export but the Aluminum Company of America, falling behind in deliveries on contracts, second hands were reluctant to resell for specific dates of delivery. This difficulty of obtaining supplies caused a stronger feeling and higher prices for jobbing lots. Some quiet foreign inquiries caused the floating supply to be quickly gathered and concentrated in a few hands, resulting in an arbitrary advance in prices, as most of the open market supplies had been absorbed but the sharp rise in prices again drew offerings from unexpected sources at concessions of 1 to 2c per pound from the prices demanded for the cornered supplies. No domestic buyers, however, could be found at this level, while exporters withdrew. When the month closed, prices were 1 to 2c per pound lower.

July, August, September, October.

In July, business was confined to jobbing lots, offerings were more ample and prices receded 3c per pound by the end of the month. In the first three weeks of August, the market was dull and easier but later a firmer tone resulted from a demand for ingots to be rolled on new sheet mills recently installed. All floating lots were absorbed at advancing prices. In September prices advanced 1 to 2c per pound be-

cause of light offerings and business was necessarily confined within narrow limits. Early in October, the export and home demand readily absorbed all metal available; in fact the supply for several weeks was inadequate to meet current requirements and prices of Virgin ingots advanced 2c per pound in the open market. The largest producers had nothing to offer for shipment over the last quarter of the year. Later, with export demand satisfied, and freer offerings, prices receded 2c per pound.

November, December.

In November, the market was better sustained, and a moderate advance was established early in the month, but with a more ample supply, an easier

feeling developed, with prices declining $\frac{1}{2}$ to 1c per pound net during the month. Business in December was quiet and in the third week the market was unsettled with prices lower on all deliveries. Buyers were holding off in anticipation of further concessions. There was little of interest in the holiday season and the market closed the year with a lack of vitality. No. 1 Virgin ingots were held within a range of 60 to 63c, being 6 to 9c per pound higher than the level occupied when the year opened.

Aluminum Prices in New York.

Extreme price fluctuations of pure aluminum (No. 1 Virgin 98-99%) in New York; by months.

	— 1915 —		— 1916 —	
	High.	Low.	High.	Low
Jan.	19.25	18.75	56.00	53.00
Feb.	19.50	18.75	63.00	53.00
Mar.	19.25	18.75	63.00	58.00
April ...	19.50	18.75	61.00	59.00
May	26.50	19.25	61.00	59.00
June	33.00	26.00	65.00	59.00
July	33.00	32.00	62.00	59.00
Aug.	37.00	32.00	62.00	58.00
Sept. ...	50.00	36.00	63.00	60.00
Oct.	57.00	49.00	67.00	62.00
Nov....	60.00	55.00	66.00	63.00
Dec.	60.00	53.00	65.00	60.00
Average..	60.00	18.75	62.83	58.58

Aluminum, Silver, and Antimony Prices in December.

Day.	— New York —		
	Aluminum. Cents.	Silver. Cents.	Antimony. Cents.
1	64.00	75.12½	14.50
2 .....	.....	75.25	.....
4	64.00	75.00	14.50
5	64.00	75.50	14.50
6	64.00	75.62½	14.37½
7	64.00	75.62½	14.37½
8	64.00	75.25	14.37½
9 .....	.....	75.25	.....
11	64.00	75.50	14.37½
12	64.00	76.00	14.37½
13	64.00	76.00	14.37½
14	64.00	75.87½	14.37½
15	64.00	76.75	14.37½
16 .....	.....	76.25	.....
18	64.00	76.62½	14.37½
19	64.00	76.62½	14.37½
20	64.00	76.62½	14.37½
21	62.00	76.50	14.37½
22	62.00	75.75	14.37½
23 .....	.....	75.75	.....
26	62.00	75.75	14.37½
27	62.00	75.37½	14.37½
28	62.00	75.37½	14.37½
29	62.00	75.37½	14.37½
High	65.00	76.75	14.50
Low	60.00	75.00	14.25
Average	63.40	75.78	14.39

Aluminum and Silver Prices.

	— New York —		— Silver —	
	Aluminum. 1915.	1916.	1915.	1916.
Jan. ...	19.01	54.33	48.89½	56.77½
Feb. ...	19.20	57.50	48.48	56.75½
Mar. ...	18.94½	60.52	50.24	57.92½
April ..	18.83	60.00	50.25	64.37½
May ...	21.85	60.00	49.91½	74.27
June ...	29.66	62.09	49.03	65.02½
July ...	32.50	60.15	47.52	62.94
Aug. ...	34.00	59.48	47.18	66.08
Sept. ...	46.75	61.90	48.68	68.51½
Oct. ...	54.17½	64.55	49.38½	67.84
Nov. ...	57.85	64.80	51.71	71.00
Dec. ...	56.80½	63.40	54.97	75.78
Average	40.13	60.73	49.69	65.66

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NO. 2.

METAL STATISTICS-1917.

The tenth annual edition of "Metal Statistics" will appear on February 14th.

This edition has been compiled with the same care that was exercised with previous editions. While the trade has already been kind enough to characterize this work as practically complete in the ferrous and non-ferrous metal fields, for buyers as well as for plant managers and engineers, some new data has been incorporated and as all tables have been carried forward a year, with scarcely any of the old data omitted, the comparisons are given a still broader scope.

Metal Statistics—1917 will be mailed free of charge to all subscribers of the STEEL AND METAL DIGEST on request.

Yours respectfully,

The Publishers.

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Effect On Metals Should We Become a Belligerent.

It is interesting to look back at the mass of predictions made a few weeks ago regarding the future of business, which it has become the custom of the press to procure at the opening of each year. So quickly has history been made in the meantime, and so sensational have been the developments, as they have touched our country, that whereas then what everybody wanted was an opinion as to what would be the probable effects of peace on our industrial situation, to-day we are only concerned with what is to happen in case of our being involved in the war. In these reviews and predictions there was great stress laid on our impregnable business and financial situation, and it was the general opinion if it was disturbed at all it could only be by an early peace or from developments outside of our country. What an illustration of man's inability to look into the future, and how humble we should be in our predictions. To-day we are facing a crisis greater and more pretentious in what it may bring, than anything that has come to us since the Civil War. Before these lines are read we may be in a state of war with Germany and the Central Powers. If so, not only will it make for developments which no one

can predict, but we would also enter into a situation which would change our position in the world, and affect our foreign relations for generations to come. That it will be epoch-making in its effect not only on our business but also as regards our political relations, stands to reason. We may in our efforts to preserve our position on the Monroe Doctrine decide to go it alone in our controversy with Germany. We may decide not to join as allies those who have been fighting Germany for two and one-half years. We may decide that the point at issue, as far as it affects ourselves, is only Germany's disregard of the law of civilization as regards the sea, and after we have won her consent to respect our rights that we have no further interest in the controversy. We are inclined to think that this is the present attitude of our administration, but we predict that if war begins it will bring with it a flood of indignation and bitterness that will sweep us far from the landmarks that are being to-day laid out for our conduct, that we will be in this war to the end for a complete settlement, so that present conditions will never again be repeated in the generations to come; in other words, that our point of view and our determination regarding the future will be exactly in line with those of the Allies.

The Effect on Metals.

It is impossible to say what effect the severance of our relations with Germany will have on the metal markets, because no one can foresee the eventual developments that will result. This much is certain, however, that should make for extreme moderation and conservative action on the part of the entire trade, and that includes the consumers as well as the producers and dealers in metals. It will be a time

when private interests must be subordinated to the interests of the country at large, and any attempts to exploit the situation should be met with immediate and forcible opposition.

The first thought that occurs to the trade is that our Government will have to provide against all possible contingencies and eventualities, which means an increased demand for metals and metal products, and the increased demand will cause higher prices. We question, however, whether prices will be advanced or in the case of some articles even maintained at anything like their present level if the demands of our country require attention. There is no comparison between the situation that will exist if war comes as compared with that of a few weeks ago. Then we had been catering to the demands of foreign governments and private consumers, and we could charge and did charge, any price that we cared to ask for our products and the urgency of their requirements enabled the metal trade to realize phenomenal profits on this business. But now if our own country, which is virtually in a state of war, requires material, it is not to be supposed that 99,999,000 Americans are going to allow a few hundred or a few thousand concerns who are fortunate enough to hold stocks of metals; or who own mines or smelters or refineries or finishing plants and mills, etc., to exploit the necessities of the country. We cannot imagine that there will be an intentional attempt to do this, but unless great care and caution is exercised through the limitation of purchases to actual requirements, and the elimination of speculative purchases by consumer and dealer, and the prevention of advances in selling prices on the part of producers and other sellers, a situation may arise that will bring about government supervision, the same as they have in all the war.

ring countries in Europe. This will not be necessary at present if everyone in the trade will lend a hand to aid and assist in properly meeting the situation, but if this is not done we can be sure that the Government will step in and make rules and regulations in which the metal trade will have no say, but will simply be forced to do what they are told.

Germany's insane act of antagonizing the United States may mean that she has played her last desperate card and is on the verge of collapse. With the ending of the war the prices of metals and all other war inflated commodities will rapidly seek normal levels again. If, on the other hand, Germany is unexpectedly successful in her new submarine campaign, and is encouraged to carry on the war, then our country will be obliged to prepare herself, and any plans for preparation would inevitably involve the commandeering of all home resources and the establishment of maximum prices. If maximum prices are set they would be based on production costs, plus, perhaps a very small margin of profit, and our readers can calculate for themselves how much lower they would be than the present market values.

We can see nothing for general business, if we are to become a belligerent, but increased home activity. The government will spend money without stint, and this will stimulate action

in every direction. Time money is likely to become firmer, but we have an abundance of funds. Our business and financial position is absolutely sound and has been made more so by the liquidation of speculative operations which has been going on of late. Of course, if Germany's threat to tie up ocean transportation to the Allies could be made good, then we would face a collapse in our prosperity, since it is based on the enormous shipments we have been making to the Allies. But we believe Germany's submarine activities have reached their climax, and our entry into the war would make for joint action on the seas with the Allies that would soon clear up this menace to our trade and civilization, and that if the war is to be continued it will be on land and not on sea. If Germany loses this war peace will probably be made with the German people and not with the German Emperor. Thus may be repeated the history of the Napoleonic wars and the Franco-Prussian war, in neither of which did the Emperor of France have anything to say about terms of peace. It will help greatly in such a case to be able to convince the German people that we did not offend and that we are their friends. The causes of this war are written in black and white and historians of the future will render a verdict in accordance with the evidence. Our part in it, as shown by the state papers, is beyond reproach as far as Germany is concerned.

Business Trends.

New High Mark For Commodity Prices.

To say that commodity prices continue to advance conveys nothing that is novel for abroad and here trends pursue courses that are familiar to every buyer. Furthermore, no substantial relief from the exactions of high prices is within anything like close range.

The index number compiled by "Bradstreet's" journal for January 1st is \$13,727 representing a new high point and showing an increase of four-tenths of 1% over December 1st last. This ratio of advance suggests that, as respects momentum the upward movement is somewhat slower than it has heretofore been. While prices in this country, collectively speaking, ascended four-tenths of 1% during a month's time, in England there was a rise of 2.7%, the index number published by the Economist for January registering a distinct advance over the figures for December and November. This authority's average of the commodities on which its index number is based is 2,200, thus the most recent number—4,953—manifests an increase of 123%. By way of comparison "Bradstreet's" basis of its index number is \$7,8808 compared with which the latest figure indicates a rise of 74%. At the same time, this index number for domestic prices reflects an advance of 25.7% over January 1, 1916, of 50% over that date in 1915 and of 54% over January 1, 1914.

The following table gives "Bradstreet's" index numbers (the totals of the prices per pound of 96 articles, since January 1, 1914).

	1914.	1915	1916.	1917.
January ..	8,8857	9,1431	10,9163	13,7277
February ..	8,8619	9,6621	11,1415	
March ...	8,8320	9,6197	11,3160	
April	8,7562	9,7773	11,7598	
May	8,6924	9,7913	11,7485	
June	8,6220	9,7428	11,6887	
July	8,6566	9,8698	11,7394	
August	8,7087	9,8213	11,4414	
September ..	9,7572	9,8034	11,7803	
October ...	9,2416	9,9774	12,0699	
November ..	8,8620	10,4768	12,7992	
December ..	9,0354	10,6477	13,6628	

Foreign Trade In 1916.

With the belated appearance of the official December returns, the exact measurement of the phenomenal expansion in the oversea commerce of the United States during 1916 is at last possible. While extraordinary economic achievements no longer cause wonder, it is not easy for the mind to grasp the full significance of the remarkable growth in the country's merchandise movements. An aggregate foreign trade of nearly \$8,000,000,000 in the calendar year recently ended is not only wholly without precedent, but surpasses by \$2,500,000,000, or almost 50% the previous record of 1915, which some people thought established the probable maximum. It is \$3,900,000,000, or 100% greater than in 1914 and \$3,600,000,000, or 84% larger than in 1913, while a still higher ratio of increase is shown over 1912.

Merchandise exports and imports during recent calendar years, together with the excess of exports, are presented herewith:

(000 being omitted)			
	Exports.	Imports.	Excess of exports.
1916 ...	\$3,481,423	\$2,391,654	\$3,089,769
1915 ...	3,554,670	1,778,596	1,776,074
1914 ...	2,113,624	1,789,276	324,348
1913 ...	2,848,018	1,792,596	691,421
1912 ...	2,399,217	1,818,073	581,144
1911 ...	2,092,526	1,532,359	560,167

Of the nearly \$8,000,000,000 of oversea commerce of the United States in 1916, exports accounted for \$5,481,000,000, or about 70% of the aggregate. All know, of course, that the domestic merchandise outgo, under the stimulus of the war demands, has set a new precedent, and the increase over the 1915 total, which was justly considered phenomenal, is \$1,926,000,000, or approximately 55%. Comparing with 1914 and 1913, gains of 159 and 121%, respectively, are shown, while as contrasted with 1912 the difference is 128%.

While less striking than the augmentation of exports, the rise in imports was noteworthy during 1916, a total of \$2,392,000,000 being the largest ever

Business Trends.

reported, and \$613,000,000, or about 35% more than in 1915. Practically the same ratio of increase is shown over 1914 and 1913, while in comparison with 1912, the previous record year, the gain is approximately 30%.

In the following table will be found the totals of exports and imports by months during the past year:

(000 omitted)

1916--	Exports.	Imports.	Excess of exports.
Jan.	\$330,936	\$184,350	\$145,686
Feb.	401,783	193,935	207,848
Mar.	410,742	213,589	197,153
April	398,568	218,236	180,332
May	474,893	229,188	245,615
June	464,685	245,795	218,890
July	444,716	182,722	261,994
Aug.	510,167	199,316	310,851
Sept.	515,007	164,038	350,969
Oct.	490,613	176,423	314,190
Nov.	517,920	176,988	340,932
Dec.	521,128	204,896	316,232

Many New Enterprises Formed Last Month.

The year 1917 opened auspiciously as regards the formation of new enterprises. Papers filed in the Eastern States for companies with \$1,000,000 capital or over involved \$244,450,000, which compares with \$230,850,000 in December. A decrease is shown as contrasted with the January returns a year ago, when the incorporations amounted to \$270,995,000. But this represented the largest output of charters in several years and was explained in large part by the incorporation of the \$60,000,000 General Mercantile Corporation and the \$50,000,000 Andes Copper Mining Company.

The grand total of all companies incorporated with a capital of \$100,000 or over, covering all States, reached \$312,481,000, against \$334,655,000 in January a year ago.

Following are the comparative figures as specially compiled by The Journal of Commerce and Commercial Bulletin of companies incorporated in the Eastern States during the last three

years, with an authorized capital of \$1,000,000 or more:

	1917.	1916.	1915.
Jan..	\$244,450,000	\$270,995,000	\$51,150,000
Feb..	365,993,300	53,950,000
Mar..	194,750,000	70,050,000
Apr..	166,650,000	32,200,000
May..	209,745,000	78,950,000
June..	264,350,000	181,247,100
July..	217,662,000	71,100,000
Aug..	113,472,000	67,100,000
Sept..	164,700,000	286,625,000
Oct..	303,768,700	208,695,000
Nov..	260,407,800	190,075,000
Dec..	230,850,000	135,125,000
Total	\$2,708,326,500	\$1,426,257,100	

Smaller Iron Output.

According to the Iron Age the production of pig iron in January fell off from that of December by nearly 28,000 tons, which is hardly as much as might have been expected with all the coke delivery troubles. Returns show a total of 3,150,938 tons, against 3,178,647 tons for December. The daily rate was 101,643 tons, or about 900 tons less than in December. This represents the lowest daily output since November, 1915. There was one more furnace in blast on February 1 than one month ago, the total being 312, but the capacity is somewhat less, being 101,886 tons per day, against a rate of 101,975 tons daily on January 1. At that the going rate is now only $4\frac{1}{2}\%$ below the average throughout 1916.

The accompanying table gives the production of coke and anthracite pig iron in the United States by months since January 1, 1915, as reported by the Iron Age:

	1915.	1916.	1917.
January	1,601,421	3,185,121	3,150,938
February	1,674,771	3,087,212	
March	2,063,834	3,337,691	
April	2,116,494	3,227,768	
May	2,263,470	3,361,073	
June	2,380,827	3,211,588	
July	2,563,420	3,224,513	
August	2,779,647	3,203,713	
September ..	2,852,561	3,202,366	
October	3,125,491	3,508,849	
November ..	3,037,308	3,311,811	
December ...	3,203,322	3,178,647	
Total	29,662,566	39,039,356	

Effect on Steel of War Preparations.

It is now altogether too early to arrive at anything like definite conclusions as to what effect war preparations will have upon steel. We are not even in war yet. Some misapprehensions have developed in certain quarters, however, and it may be well to take stock of what we can already see.

Our prime object is to protect our citizens and defend our honor. If that leads to our fighting Germany, while it does not by the same token make us a member of the Entente, it certainly would not mean that our preparations to fight Germany should operate to the disadvantage of those who have been fighting Germany for two and a half years. To deliver to the United States Government shells that would otherwise go to other nations well able to shoot them would be the height of inefficiency. If it is a case of shells it will be a case of additional shells.

The maximum amount of steel that would be called for by the most comprehensive program would be no more than a relatively small fraction of our total steel production. We have already estimated that the total amount of rolled iron and steel exported last year, or used in the manufacture of goods exported, represented about 25% of our production. Some of that was material exported to neutral countries, and a considerable part of it was commercial steel, not shells or shell steel. Nevertheless the steel that reached the Allies did them a great deal of good and represented a very considerable part of the steel they used in carrying on the war on a tremendous scale.

As to the orders for steel now on mill books for domestic consumers, there is certainly no chance whatever of their being called to do without all of it, or even a very large part. What would occur would be the placing of rush orders, at certain plants, whereby deliveries to ordinary domestic consumers would be set at a reduced rate, shipments being perhaps 10 or 25% less, or

something like that.

The war being established as one of efficiency of the men in the field and the women and men at home, the United States will not make the mistake of using its resources other than in the most efficient manner. It would be the height of absurdity for the United States not to correlate its activities with those of the Allies. For instance, while we do not know how much progress has been made in bringing up the capacity of the Trans-Siberian Railroad to Russia's full requirements, it may easily be found that hastening of that work would be of great advantage. It might be found that one great stroke against the common enemy, if Germany becomes a common enemy, would be for the United States to send engineers and men to hasten that railroad work, and if necessary commandeer such facilities as would be needed to furnish the remaining rails, cars and locomotives, for the road in the shortest time that physical conditions would permit. We have no army but we can build railroads.

It is an interesting fact that some of the steel companies, recognizing that the country has been suffering from an insufficiency in railroad facilities, have of their own initiative made arrangements whereby, irrespective of priority of orders, they are delivering material needed for railway equipment at the rate at which it can be used, for the purpose of helping to bring up the capacity of the railroads. These efforts were undertaken voluntarily.

The government, then, could do vastly more. If steel is needed, the thing to do is to make as much steel as possible. In a state of war the government can see to it that every ton of steel needed for railway equipment is made as fast as it can be used, that every shop engaged in making railway equipment works at its maximum rate on those orders, and that railway capacity is used to aid the production of steel and other necessities for prosecuting

the war, before it is used for rendering any service that can be deferred. The people want to help and their opportunity would be in submitting to such inconveniences as might be caused.

The possibility has been suggested that steel production might be curtailed, in the event of our undertaking to train an army, by men enlisting. Without any example we should know better, but we have the example abroad, of French railway employes, English steel workers and coal miners, being called back from the training camps in the early weeks of the war, because they should not have been allowed to enlist.

It is said of the European belligerents that the work of the men at home is as important as the work of the men at the front. In our own case their work would be vastly more important.

A week hence, a month hence, we shall all have vastly clearer vision on all these matters, but it certainly does seem already that there is to be no very serious curtailment in the supply of steel. Rearrangements may be made whereby some consumers may suffer, but if we have entered upon what we think is probable, we are all going to suffer very keenly indeed before it is over.

A Census of the Copper Industry.

A Recommendation to United States Government to Secure the Facts and Figures—The Reasons Why This Step is Important and Should be Done Immediately.

The situation is such that we believe it is the duty of the government to immediately take a census of the industry in order to find out what supply of copper would be available for government requirements during the next five months. These requirements may be small or they may be very large, and it seems to us that the thing to do is to immediately ascertain what stocks are on hand, and what disposition is to be made of the output between now and the end of June. Nearly all of the producers say that they have no stocks of copper, and have sold their entire output for the next five months. That being the case the government should find out who has copper and who is going to get copper and what disposition is going to be made of it. This information could be confidentially supplied to government agents by the producers and consumers and the dealers, and the government would then know exactly how to act in the event of extensive military preparations being necessary. The producers, for instance, should be asked to answer questions, somewhat as follows:

1st—State amount of refined copper on

hand on January 31, 1917.

2nd—State actual production refined copper during December and January, classifying according to grade (Lake, Electrolytic or Casting).

3rd—Furnish complete list of copper shipments during December and January, giving buyer's name, destination of shipment and net weight.

4th—State estimated production of refined copper for each month February to June inclusive.

5th—Furnish complete record of copper sold for shipment for each month February to June inclusive, stating tonnages and buyers' names.

6th—Furnish information concerning any stocks of copper that you know of which are stored other than at the refineries or at consumers' works.

With this information in hand the government could then take the matter up with consumers, and could learn what stocks they are carrying; what their requirements are; for what purposes the metal is being used; to what extent their future requirements are covered or over covered; and what amount could be released without in-

terfering with war orders or absolutely essential domestic business.

It may seem to some in the trade that there is no occasion yet for the Government to do this, but there is no telling what the developments may be, and now is the time to collect all the data concerning our home resources when it can be done carefully and systematically. Let us profit by England's mistakes and oversights, and put ourselves in a position to meet all possible eventualities.

Our suggestion that the government take a census of the copper industry has received varied comments in the trade. Those outside of the industry have generally stated that they consider that a government investigation of this sort should be made immediately, but among the copper trade proper the opinion seems to be that there is no occasion for anything of this sort. They ridicule the idea of the government having anything to say in the conduct of the business or placing any restrictions or regulations on the producers or other sellers of copper. In fact, they

do not expect to have any direct negotiations with the government but believe that their dealings will be only with such manufacturing concerns as receive the government orders for munitions, and on which they suppose they will be free to charge whatever price the metal will bring. Perhaps they are right and perhaps they will be able to treat our own government in the same manner in which they have treated the Allied Governments and establish higher and higher prices as the war demand increases.

Perhaps on the other hand they may find that our Government will take steps to protect the interests of the entire country and prevent any exploitation of such a serious situation as now confronts us. We do not say that there will be an attempt to exploit the situation, but instead of ridiculing the idea of government control, the copper trade should take steps to lay the whole facts of the industry before the proper authorities in Washington and relieve themselves of the responsibility of charging prices which are 200% over the cost of production of this most important war metal.

The Future of Foreign Trade.

At the Banquet of the Fourth National Foreign Trade Convention, held last month at the William Penn Hotel, Pittsburgh, Mr. James A. Farrell, Chairman, delivered the following address:

"No more convincing proof could be given of the importance which external commerce has assumed in the industrial, commercial and financial activity of the people of the United States than the composition of this Fourth National Foreign Trade Convention.

"From a body of specialists and experts who met at Washington, in May, 1914, to compare notes of their experience in the promotion of American trade abroad, and to impress on their fellow citizens the need of a larger outlet for American products, the attendance at successive Conventions has broadened and become more comprehensive.

"There has probably never been assembled under one roof a body of men so thoroughly representative of all the national interests of production, distribution and banking, as that I am now addressing. Every section of the country has its spokesmen here; every department of manufacture, every branch of merchandising.

"There are representatives of agriculture, of mining, and of transportation; of the

finance that is the handmaid of foreign commerce, there are with us and of us some of the most distinguished exponents.

"When our First Convention met, there was depression in most of our staple industries; there was a large and steadily growing mass of unemployment. The keynote of that meeting was the relief of adverse domestic conditions by the opening of new markets abroad for the products of American workshops. This was the purpose for which the National Foreign Trade Council was founded, and on whose pursuit all its efforts have been concentrated.

"Circumstances, then unforeseen, have changed the whole aspect of our foreign commerce, but the problems of its normal development are with us still.

"For the calendar year 1913, the domestic exports of the United States amounted to \$2,448,000,000; for 1916, they have apparently exceeded \$5,480,000,000. Enhanced values have had a good deal to do with this stupendous gain, and its chief element has, of course, been supplies directly or indirectly contributory to the conduct of

war. But there has been a solid increase in the proportions of our trade with the neutral nations; there has been, above all, a demonstration of the vast possibilities of the productive energy of the United States.

"In two years of European war, this country has received for its exports \$4,000,000,000 more than it would have received had the average of preceding normal years been maintained. The result has been that the United States has exchanged the status of a debtor, for that of a creditor nation, that it possesses one-third of the world's gold, that its loans to other nations total over \$2,000,000,000.

"That the problems of financing the foreign trade of the future—of placing the loan where the trade will follow it—has been greatly simplified needs no demonstration. But the necessity for expanding the normal proportions of our sales abroad will also be found to have become more acute. Many American industries have had to increase their capacity to be able to fill war orders. The standard of employment has reached its maximum, and so has that of wages. Labor has been drawn from the farm, the forest and the mine to meet the abnormal demands of manufacturing production.

"When the period of hectic industrial activity, of inflated prices and payrolls of unheard-of amount comes to an end with the conclusion of peace, we shall have to reckon with conditions in Europe imperatively demanding the speedy resumption there of a foreign trade which experience has shown to be inseparable from domestic prosperity. Though hampered by the tragical reduction of man-power the advent of women into the ranks of the workers in machine shops, the gain in efficiency from the wider and freer use of automatic tools, and the intensive co-operation both in production and distribution which will be universal, instead of partial in its application—all these will go far to reinforce the reduced vigor of European competition in the markets of the world.

"With us, entry into foreign trade is no longer a matter of choice. The distinction between domestic and foreign commerce is rapidly disappearing. No enterprise large enough to be called national can be clipped short at the boundaries of the Republic. When, in the first week of the war, the almost complete suspension of our export and import trade dislocated all the activities of the home market, the American people had an object lesson which they are not likely to forget, showing that foreign trade is a vital element in domestic prosperity. The problems that will come with the economic reconstruction of the countries now at war are bound to bring into bold relief the interdependence of nations. Our country will find the path of duty and opportunity coincide in helping to make that fact clear. Accepting the sound principle that commerce which will stand the test of time must rest on a fair exchange of values, our rightful share of the world's trade will be

that to which our natural resources, developed by our enterprise and skill, entitle us. In short, the fitness of our products to meet the requirements of the rest of the world must continue to be the measure of the expansion of our foreign trade.

"The opportunities of the near future are sufficiently alluring. There will be a period of industrial reconstruction for Europe, and the retarded development of neutral countries is likely to resume at least its former rate of progress. In this latter field there is room enough for all—the more so because in countries still bare of the appliances of modern civilization the process of equipment is apt to be a cumulative one. The new facilities of transportation, production, or public convenience, not only create a demand for more, but help to create the wealth needed to pay for them.

"We have seized unfairly the commerce of no people; we have taken no mean advantage of the industrial extremity of others. But we have accepted the responsibility of carrying on enterprises which had been begun by European capital whose further supplies were interrupted. Our entrance into new fields of business enterprise abroad has been of signal benefit, not only to the countries where the investments have been made, but to the original investors whose work we have taken up at the point where they were compelled to lay it down.

"It is significant that many of the orders for munitions now placed in this country provide that, should their fulfillment be interrupted by the close of the war, delivery will be taken of an equivalent amount of material for peaceful purposes. Thus, as the war demand abates, our mines, forests and workshops will be drawn upon to aid in the reconstruction of great devastated areas and the re-equipment of ruined industrial plants. All this will mean new drafts on our surplus capital, but it will also mean prosperity to our productive industry, and will thus provide a profitable return on the capital it employed. A distinction used to be drawn between government loans yielding annual interest and industrial loans usually carrying a preference for the purchase of the goods of the lending nation. But under the stress of war, European governments have become the largest importers of all history. Then, there are governments like those of Latin-America and China, which are so directly identified with works of public improvement and national development requiring the importation of materials and machinery, that their borrowings become, strictly speaking, industrial.

"It is difficult to realize the colossal scale on which Europe will have to borrow to make good the destruction of war. At least five billion dollars' worth of property will have to be replaced, and the demands of the work of reconstruction will be too vast to be met by private enterprise. The first demand will naturally be for houses to shelter the homeless thousands whose native villages have been reduced to shape-

less ruin. The next will be for the surplus of such material, machinery and equipment as can be used to fabricate other machinery and equipment needed for industrial reconstruction and the introduction, where possible, of mechanical appliances to perform work which used to be done by hand. The process will not essentially differ from that pursued in the case of a factory destroyed by fire, whose owners, after rebuilding, first install the equipment needed to resume its most profitable production.

"In the presence of the gigantic needs of the war-swept territories in Europe and of their poverty-stricken populations, any application of the old-time methods of competition sounds trivial.

"Co-operation on the broadest and most generous scale, and in the most sympathetic spirit, must be the rule, if economic recovery is to be quick and thorough. We shall greatly facilitate international co-operation for the general welfare of the world by establishing a co-operative system of selling in foreign trade among ourselves. We shall greatly lessen the possibility of perpetuating in the domain of commerce the bitterness and hatred engendered by the war, if we refuse to be drawn into any convention, agreement or understanding that would make us parties to a boycott of the commerce of any of the nations now arrayed against each other. To meet any attempted discrimination against the exports of the United States, we shall be free to choose our own weapons and to invoke the aid of our own Government. But the American people will be prompt to recognize the fact that the poverty of Europe cannot contribute to their welfare, any more than the misfortune of their commercial and industrial rivals can promote the prosperity of their foreign trade. I see no reason to doubt that they will prepare to do their part in laying the foundations of a permanent peace on the firm basis of mutual respect and evenhanded impartiality and fairness in the dealings of commerce.

"This Convention has resumed the practical discussion of Foreign Trade promotion, after taking into consideration international developments occurring since the Third National Foreign Trade Convention at New Orleans last January. That Convention, like its predecessors, favored the legislative action necessary to build up an American Merchant Marine, and specifically approved of the creation of a Government Shipping Board; it gave expression to the conviction that national welfare depends upon the participation in foreign trade of a steadily increasing number of smaller manufacturers and merchants, all gaining a wider market as a protection against recurring periods of domestic depression and assuring greater stability of labor employment; it protested against the application of the anti-trust laws of the United States to combinations of American exporters formed for the purpose of meeting combination among their foreign competitors; it recognized the need of a more elastic tariff system, for the

purpose of countering preferential tariff agreements that the European allies in the war may deem essential to form after the conclusion of peace, and it counselled the investment of American capital abroad in such manner as to assist the development of foreign markets and stimulate an enlarged demand for American products.

"Since the last Convention, two new official agencies have been created for the furtherance of a national foreign trade policy—the United States Shipping Board and the Tariff Commission. With the limitations which surround the action of both, it would be too much to expect any remarkable results from the work of either. But, composed as they are of men of experience, tact and discrimination, there is every reason to assume that they can render valuable service to the common cause. That cause is being also served with ability by the Department of Commerce, the Federal Reserve Board and the Federal Trade Commission. All of these Boards and Commissions owe their being to legislation passed in response to the demand of business organizations that the Executive and Legislative Departments of the Government should be more responsive to the needs of commerce and industry.

"While they are largely composed of business men, they must look to organizations like the National Foreign Trade Council, and an assemblage like that now before me, for an interpretation of how the Government may most effectively aid and further the business enterprise of its citizens. Whatever the recommendations you may see fit to make toward this end, I believe you may rest assured that they will receive at least respectful consideration.

"But I cannot help thinking that, above and beyond the bearing of our domestic policy on the outlook for our foreign trade, we must set ourselves to grasp the larger and more vital principles of international co-operation. It is a debatable question whether the United States can become a member of an International League of Peace for the prevention of further war, but it is not at all doubtful that we can render an invaluable service to the establishment of lasting concord among the peoples of the earth by setting our face against anything that looks to the perpetuation of commercial war in peace.

"The spirit in which our merchants, manufacturers and bankers addressed themselves to the relief of the sufferers by the historic disasters at Chicago, Baltimore, and San Francisco, is the spirit of generous accommodation in which we must approach the needs of Europe after the war.

"Here, the path of devastation has had a broader sweep and more tragic accompaniments. The forces of destruction have been fed by draining the very life's blood of the nations in capital and man-power. Wealth has been lavished on the annihilation of wealth; the savings of one generation have been used to impoverish another. But from the whole ghastly conflict will emerge a regenerated Europe—a Europe

with nobler ideals and higher standards of attainment, both in spiritual and material things.

"In cold, prosaic fact, however, it will be a Europe needing a larger allowance of credit and presumably worthy of it. That is a point about which every business man interested in foreign trade will have to satisfy himself, but it may be regarded as certain that our share of the commerce of reconstruction must largely depend on the amount of credit we are willing to grant.

"At present, our most pressing problem is how to produce quickly enough to satisfy the demands of export trade. After the

war, the financial aspect of the task will come into the foreground, and the huge requirements of the necessary loans and credits will provide a new chapter in our national experience.

"But it is certain that, on the readiness with which these requirements are met must depend the future of our foreign trade, and, consequently, the prosperity of domestic industry. In sober truth, the motto of this Convention, 'Greater Prosperity Through Greater Foreign Trade,' might with entire correctness be made to read:

"No enduring Prosperity without Foreign Trade."

The Steel Industry's Earnings.

No exaggerated impression of the earnings of the steel industry will be obtained by using the earnings reports of the United States Steel Corporation as an index, for among the larger competitors of the corporation are interests that did not book as far ahead, while the great majority of the small steel producers have been selling a great deal of steel at premium prices, on account of the deliveries they were able to make.

With nearly \$105,968,347 earned in the December quarter the Steel Corporation's earnings are tremendous, but the more impressive fact is that the largest earnings are still to come, by reason of the fact that higher-priced orders are still to be filled. It is far from improbable that a quarter will be reached with earnings of \$150,000,000, probably the second or third quarter of this year. The increase of \$20,000,000 from the September quarter to the December quarter, when transportation difficulties were encountered and profits on ore transportation were decreased, is suggestive of the increases in earnings still to come.

The stock market, in its appraisal of the value of the common shares of the Steel Corporation and of some of the independents, has not rated the shares at the value indicated by the earnings. It is not a case of a rate of earnings, but of actual earnings, i. e., in these times when a million dollars is earned it is not to be taken that a rate of earning at one million dollars has been established, but that one million dollars has been added to assets. The

share values in the market do not fully reflect this.

Perhaps it is because the absorbing power for these large issues has a limit, but more likely it is because losses are feared for the future. The earning power of a plant is made partly by outside conditions as to demand and supply. Earnings in the steel industry have passed far beyond the bounds where the ground is known. Throughout the industry's history, and until very recently, the cry has been for more capital, for increases in productive capacity and refinements whereby cost of production would be reduced. For the first time now in the history of the steel industry the supply of capital is outrunning the requirements. A new use must be found for part of the surplus earnings, when they are not paid out in dividends.

Earnings Per Ton.

Using our monthly estimates of the United States Steel Corporation's shipments, in percentages of capacity, we have constructed a table of the apparent earnings per ton during 1916. In order that the showing should not be distorted in the summer months by the extra earnings made in the transportation of Lake Superior iron ore we have made deductions of such profits in 1916. The average earnings per ton of steel in the form in which shipped appear to have been approximately as follows:

January	\$14.50
February	15.50
March	16.50
April	19.50
May	18.50

June	19.50
July	20.50
August	22.50
September	24.00
October	24.50
November	27.50
December	30.50

It will be seen that the wage advance of February 1st does not appear to have left any impress. That of May 1st, however, possibly accounts for the reduction in the computation shows in profits per ton. The wage advance of December 15th does not show a trace in the figures.

It will be observed that the profits per ton increased much more rapidly in the second half of the year than in the first half. That is in line with the course prices pursued, as by far the heaviest advances occurred from October 1, 1915, to April 1, 1916, and the corresponding increases in earnings fall six months or more later.

As the earnings per ton as computed above exclude profits in ore transporta-

tion they are not directly comparable with the familiar computation made by dividing the Steel Corporation's shipments of steel as annually reported into the annual earnings, but it is of considerable interest, nevertheless, to set down the average earnings per ton per year including profits from all sources, as follows:

	Total earnings.	Steel Products for sale.	Avg. per ton.
1902.	\$133,308,764	8,033,556	\$16.59
1903 .	109,171,152	7,458,879	14.64
1904 .	73,176,522	6,792,780	10.77
1905 .	119,787,658	9,226,386	12.98
1906 .	156,624,273	10,578,433	14.81
1907 .	160,964,674	10,376,742	15.51
1908 .	91,847,711	6,206,932	14.80
1909 .	131,491,414	9,859,660	13.34
1910 .	141,054,755	10,733,995	13.14
1911 .	104,305,466	9,476,248	11.01
1912 .	108,174,673	12,506,619	8.65
1913 .	137,181,345	12,374,838	11.09
1914 .	71,663,615	9,014,512	7.95
1915 .	130,396,012	11,762,639	11.09

Steel Making Capacity.

Estimating steel making capacity at recent dates in accordance with actual production figures, and prospective capacity in accordance with the amount of new construction in progress and the probable time of its completion, the steel productive capacity of the United States in terms of annual steel ingot tonnage, may be set down about as follows

January 1.	Gross tons annually.
1916	40,000,000
1917	43,000,000
1918	47,000,000
1919	49,000,000

It is quite possible that new construction will proceed so slowly this year that capacity at the end of the year will be less than 47,000,000 tons, while it is also quite possible that it will not require the whole of 1918 to bring the total up to 49,000,000 tons. It is to be presumed, also, that some fresh pro-

jects will be undertaken and brought to completion before the end of next year. It is possible that two years hence the capacity will be 50,000,000 tons.

In the past the output of finished rolled steel, in the form of products which require no further hot rolling, rails, rods, plates, shapes, black plates, etc., has been about 76% of steel ingot production, and thus the capacity in actual commercial steel should be taken at about one-fourth less than the figures given above. In addition, however, there are steel castings, not considered above, the capacity for producing which is somewhat in excess of a million tons. There has not been much real expansion lately in this direction, but indeed a movement in the contrary direction, in that some of the steel foundries have made arrangements whereby they are casting ingots to be rolled elsewhere.

Topical Talks on Iron.

XLVI.—Tonnage of Commercial Iron and Steel.

Statistics of iron and steel production are somewhat confusing to the layman, and the writer has even noted instances of steel producers becoming confused by their own figures. The tonnages of iron and steel as produced through certain manufacturing processes are quite different from the tonnages of commercial material sold. What is commonly called "steel production," for instance, is not commercial steel at all. When the United States is making, according to common parlance, 40,000,000 tons of "steel" a year the tonnage of commercial steel shipped is only about 30,000,000 tons.

The course of the material is substantially as follows. First, pig iron is produced, chiefly from ore, though a small tonnage of scale, scrap, etc., is charged into the blast furnaces with the ore. A part of the pig iron, say about 20% normally, goes to iron foundries, where it is melted, usually with scrap, to make a larger tonnage of iron castings. At many foundries, particularly those located some distance from producing centers, the quantity of scrap melted may exceed the quantity of pig iron.

A small proportion of the pig iron passes to steel foundries, where pig iron and scrap are converted into steel castings, a finished product of the iron and steel industry, just as are iron castings.

The great bulk of the pig iron goes to the steel works. In the Bessemer works scarcely any scrap is used but in the open-hearth works the amount of scrap used with the pig iron is large. The major portion of this scrap, however, is scrap produced at the works during rolling operations. The production of "steel" at a works is usually given in terms of steel ingots produced, but steel ingots are purely an intermediate product. As they are rolled scrap is produced, which goes to the open-hearth furnace, also some scale, the magnetic oxide, which goes to the blast furnace. Thus the same material is weighed more than once at the ingot

scales of the open-hearth plants, and the record of the scales is not the record of commercial steel produced, but the record, substantially, of the performance of the open-hearth furnaces. Generally the output of rolled steel is about 75% of the output of steel ingots.

The observation is sometimes made that the production of steel has exceeded the production of pig iron. The statement is misleading, by itself. What occurs is simply that so much scrap is produced in rolling the ingot, and so much, though a much smaller tonnage, of old material is used, that the two together exceed the pig iron which goes to the iron foundries and puddling furnaces, the latter using a little pig iron though not much.

Under ordinary circumstances, when the United States produces 40,000,000 tons of pig iron in a year, the commercial iron and steel products, the materials actually sold, would be somewhat as follows: Perhaps 10,000,000 or 12,000,000 tons of iron castings, usually to be machined and thus reduced in weight for final employment; somewhat more than 1,000,000 tons of steel castings, likewise to be machined; about 30,000,000 tons of rolled steel, and say 1,500,000 tons of rolled iron "wrought iron".

Thus there would be a total of about 44,000,000 tons of material, most of it to be reduced in weight before final employment. The iron and steel castings would be machined, and the rolled iron and steel would suffer considerable losses, as much of the rolled material is not ready for employment. The skelp must be made into pipe, the rods into wire, and so on. In a general way the weight of iron and steel as it passes into final employment is approximately equal to the weight of the pig iron. Pig iron contains only about 95% iron, so that there is a direct loss of almost 5% there, and there are complete though slight losses at other points. The use of old material makes up for these unavoidable losses, but does little more.

Steel Plants.

XV.—Midvale.

The Midvale Steel & Ordnance Company is a holding company, organized October 5, 1915, with \$100,000,000 capital stock, all common, of which \$75,000,000 is issued. Headquarters are in New York, where are located W. E. Corey, president and William B. Dickson, secretary and treasurer. Alva C. Dinkey is vice-president and is located at the administrative offices of the subsidiary companies in Philadelphia, being president of the Worth, Midvale and Cambria companies.

The Midvale Steel & Ordnance Company owns a controlling interest in the Cambria Steel Company, acquired in February, 1916, and the entire share issues of the other companies named below, acquired chiefly in October, 1915:

Midvale Steel Company; works, Nicetown, Philadelphia.

Worth Bros. Company; works, Coatesville, Pa.

Cambria Steel Company works; Johnstown, Pa.

Remington Arms Company; works, Eddystone, Pa.

Buena Vista Iron Company; iron ore deposits, Mayari district, Cuba.

The blast furnace capacity of the combination is as follows:

Cambria: Six stacks of the original plant, built 1853 to 1879, rebuilt and remodeled at various times; Franklin plant; No. 7, first blow in 1906; No. 8, 1907; No. 9, June 5, 1916; Nos. 10 and 11, decided upon November, 1916; No. 10 expected in May, 1917; No. 11 later. Completed capacity, 1,515,000 tons; expected capacity, 300,000 tons, to make 1,815,000 tons.

Worth: Two stacks first operated May 10, 1910 and December 1, 1912; capacity, 350,000 tons. Being built, No. 3, expected in March, 1917, with 160,000 tons capacity. Prospective total capacity, 510,000 tons.

There are no blast furnaces built or building at the Midvale plant. The total rated capacity of the combination will therefore be 2,325,000 tons of pig iron annually. On account of the necessity of refining, and other contingencies, the

actual productive capacity may be taken at 2,200,000 tons, or approximately 5% of the prospective capacity of the United States when the present new construction program is completed.

The steel making capacity is as follows, in gross tons of ingots or castings per year:

Midvale: (all open-hearth or crucible)	
Acid ingots	105,100
Basic ingots	43,000
Crucible ingots	3,090
Acid castings	2,200
Basic castings	6,500
Total	159,890

Worth: basic open-hearth ingots	
Original (1896)	425,000
Completed in 1916	210,000
Total	635,000

Cambria:	
Bessemer 1871	700,000
O. H. No. 1 (1879)	
Basic	228,000
Acid	12,000
O. H. No. 2 (1901)	
Basic	810,000
Acid	30,000
Total	1,780,000

The total rated capacity of the combination is therefore 2,574,890 tons annually of open-hearth castings and Bessemer and open-hearth ingots.

The blast furnace capacity more closely approximates to the steel making capacity than is usually the case with steel interests, the difference being only about 15%. Thus the organization is simply provided with blast furnace capacity. It is fully provided with finishing capacity, down to some very fine products, for the steel produced and thus does not have finished steel to spare as is the case with many steel works.

When present new construction is completed the United States will have a capacity of about 50,000,000 tons in steel ingots and castings, the Midvale proportion being about 5%.

The Iron and Steel Situation.

Steady Markets in January.

It is obviously necessary to confine discussion of the iron and steel market in this issue to what occurred in January. Germany's announcement of February 1st forbidding neutral shipping in a million square miles of the high seas is too new at this writing for intelligent reference.

On the whole the course of the iron and steel markets during January was uneventful, and that was as favorable a thing as was reasonably to be expected considering the development of December, which marked a change from the sharply advancing market and excited buying that had characterized preceding months.

Transportation.

Transportation conditions were fully as unsatisfactory in January as they had been in December. The production of coke in the Connellsville region was restricted to 75 or 80% of the requirements of the furnaces depending upon the region, making a condition somewhat worse than the average of December. At the steel mills the inadequacy of transportation facilities was less by way of car shortage and more by way of slow movement of cars when loaded and of restrictions in loading imposed by various embargoes. Conditions were worst in the Pittsburgh and Youngstown districts. While only rough estimates can be made it is probable that shipments of steel by mills in the two districts were curtailed by something like 15% while production of steel was reduced by 5 to 10%. Thus there was a further accumulation of steel, part of it being in finished product awaiting shipment and part in unfinished steel, chiefly ingots, awaiting rolling. Only the mills with a surplus of blooming mill capacity undertook to stock ingots.

As the blast furnaces tributary to the Connellsville region, which suffered a curtailment in their coke supplies of 20 or 25% comprise but little less than one-half the pig iron producing capacity of the country, and as there were some shortages elsewhere it seems fair to estimate that pig iron production in

January was about 10% less than would have been the case if there had been full supplies of coke.

The restriction in pig iron production was substantially the same at steel works furnaces and at merchant furnaces. In most cases the steel works were not forced by pig iron shortage to curtail their production of steel, though there was some curtailment due to inability to ship finished products, as already noted, as most works had reserves of scrap and pig iron upon which to draw. As the general policy was recently adopted to reduce inventories as much as possible by the end of the year, or sooner if convenient, the steel works were not greatly disturbed by this necessity. Although the consumers of merchant iron, and particularly the foundries, had accumulations of iron in most cases there were some who were forced to buy spot lots, and for these very fancy prices were realized.

Developments in January showed clearly that shippers were right some time ago when they contended that the chief difficulty with the railroads was a shortage of motive power. Owing to the various special efforts made to move empty cars and return them to owners the supply of empties was much improved, but as this difficulty diminished the other difficulties arose, of slower movement of loaded cars, even from interchange tracks, and of embargoes caused by congestion at junction points. The unfortunate feature of the situation is that there is no hope of a great improvement as to motive power, for the locomotives are being overworked and there is not time to keep them in good repair. The advent of moderate weather will improve their steaming capacity, but each month they get in worse physical condition.

Price Changes.

Effective January 23rd, the Steel Corporation subsidiaries advanced prices \$3 a ton on shapes and plates, to 3.25c and 3.75c respectively. The majority of independents had been quoting above base prices on many of their inquiries

and within a short time the new Steel Corporation prices became the minimum of the market. It is understood that prior to the advance the Steel Corporation subsidiaries covered some of their customers for additional tonnages.

Steel bars, which had previously moved closely with shapes and plates, were not advanced. Specifications for bars in January were considerably less than shipments, perhaps one-third less, while in nearly all other branches of the finished steel trade the specifications were approximately equal to shipments, and in some cases in excess of shipments.

It is worthy of note that while the entire advance in the finished steel market of more than two years' dura-

tion has been ascribed almost wholly to a scarcity of steel in general there has been distinct evidence of demand and supply controlling to an extent the price relations between bars, plates and shapes. Prices now are 3.00c for bars, 3.25c for shapes and 3.75c for plates, but at the beginning of the movement, in the fore part of 1915, when the war orders for large rounds were such a factor, bars advanced beyond plates, and in June, 1915, the regular market was 1.15c on plates and 1.20c on shapes and bars. It was not until late in 1915 that plates advanced to a level with bars.

Steel Business on Books.

It is particularly important at this

Pig Iron Prices.

(Averaged from daily quotations; at Philadelphia, Buffalo, Cleveland and Chicago, prices are delivered.)

	Bessemer.	Basic.	No. 2 fdy.	Basic.	No 2 X fdy.	Cleve-	No. 2 fdy.	Ferro-	Fur-		
1915	Valley	Valley	Phila.	Phila.	Buffalo.	land.	Chi-	mangan-	nace		
							cago.	ese.*	coke x		
Jan. ..	13.75	12.50	12.75	13.50	14.45	13.25	13.25	13.45	9.50	68.00	1.55
Feb. ..	13.64	12.50	12.75	13.50	14.50	13.25	13.25	13.50	9.50	68.00	1.55
Mar. ..	13.60	12.50	12.75	13.50	14.05	12.74	13.25	13.39	9.42	78.00	1.53
April .	13.60	12.50	12.75	13.40	14.05	12.69	13.25	13.50	9.25	78.00	1.55
May ..	13.60	12.50	12.75	13.25	14.25	13.17	13.25	13.50	9.47	91.00	1.50
June ..	13.75	12.57	12.70	13.42	14.25	13.08	13.25	13.50	9.50	100.00	1.50
July ..	13.98	12.87	12.72	13.83	14.28	12.83	13.20	13.50	9.61	100.00	1.67
Aug. ..	15.12	13.98	13.71	14.83	14.91	13.83	14.08	13.88	10.77	100.00	1.54
Sept. .	15.93	14.80	14.50	16.70	15.91	15.43	15.04	14.30	11.22	107.50	1.66
Oct. ..	16.00	15.00	14.58	17.25	16.25	15.75	15.25	15.08	11.71	105.00	2.18
Nov. ..	16.67	15.88	15.82	17.40	16.95	16.73	16.47	17.50	13.14	100.00	2.35
Dec. ..	19.19	17.73	17.98	18.01	18.81	18.02	18.13	18.48	14.00	105.00	2.85
Year .	14.90	13.78	13.81	14.88	15.25	14.23	14.31	14.47	10.59	91.71	1.79
1916											
Jan. ..	21.00	18.00	18.50	19.24	19.71	18.25	18.80	19.00	14.92	115.40	3.14
Feb. ..	20.50	17.88	18.50	19.50	19.75	18.25	18.80	19.00	14.64	139.00	3.41
Mar. ..	20.67	18.48	18.50	19.60	19.77	18.77	18.86	19.24	15.00	175.00	3.45
April .	21.00	18.48	18.50	20.50	20.20	19.25	19.00	19.50	15.00	175.00	2.45
May ..	21.00	18.21	18.44	20.50	20.25	19.15	19.08	19.50	15.00	175.00	2.34
June ..	21.00	18.25	18.39	19.90	20.04	18.75	19.30	19.50	14.63	175.00	2.54
July ..	21.00	18.00	18.25	19.15	19.75	18.75	18.80	19.50	14.00	175.00	2.65
Aug. ..	21.00	18.00	18.27	19.00	19.58	18.75	18.57	19.17	14.00	175.00	2.75
Sept. .	21.32	18.27	18.58	19.50	19.50	19.04	18.67	18.75	14.38	165.00	2.94
Oct. ..	23.81	20.17	20.56	20.52	20.58	20.48	19.87	19.79	15.35	165.00	5.69
Nov. ..	29.40	24.80	25.60	24.68	25.00	27.31	24.58	25.70	19.72	165.00	6.91
Dec. .	34.84	29.84	29.84	29.84	30.27	33.81	30.48	29.34	23.38	170.00	9.00
Year	23.05	19.87	20.16	19.96	21.20	20.67	20.40	20.67	15.84	164.12	3.94
1917											
Jan. ..	35.00	30.00	30.00	30.00	31.48	35.25	30.95	30.50	24.27	175.00	9.44

* Contract price, f o b Baltimore;

x Prompt, f o b, Connellszille ovens.

time to take stock of the amount of business on books of steel producers, as well as of its character. The reports of the Steel Corporation indicate that its subsidiaries have business in the form of contracts and specific orders equal in tonnage to the output of between nine and ten months. Deliveries are not concurrent between the different products, as there are rails sold for 1918 delivery, very nearly the expected production, according to mill accounts, while on the other hand sheets and tin plates are sold only to July 1st.

The large independents are sold ahead approximately the same as the Steel Corporation. The small independents, which customarily do not sell nearly so far ahead, are well sold up, nevertheless, by an average of more than three months.

A note of warning should be sounded against the claim commonly made that the business on the books of steel companies is unusually sound because it is much more largely than usual in the form of specific orders. There is an element of uncertainty nevertheless. When the specific order is for steel for construction work, as bridges, buildings, cars and locomotives, there is very little likelihood of delay in shipment even though business conditions become unsatisfactory. The business on books at the present time does not contain the usual percentage of such tonnage, as construction work in general is not up to normal for active times. As to ship plates there is, of course a large tonnage and the end of the war would not decrease the pressure at shipyards a particle. Obligations as to other ma-

Finished Steel Prices.

(Averaged from daily quotations, f.o.b. Pittsburgh.)

1915	Shapes	Plates.	Bars.	Pipe.	Wire.	Grooved		Sheets				Tin plate.	Comp. Fin. steel.
						Wire Nails.	Steel Skelp.	Black.	Galv.	Blue Annd.			
January	1.10	1.10	1.10	81	1.34	1.54	1.13	1.80	2.80	1.30		3.10	1.4554
February ...	1.10	1.10	1.10	80 $\frac{3}{4}$	1.38	1.58	1.13	1.80	3.09	1.30		3.10	1.4716
March	1.15	1.15	1.15	80	1.40	1.60	1.13	1.80	3.40	1.30		3.15	1.5098
April	1.20	1.20	1.20	80	1.37	1.57	1.13	1.80	3.40	1.33		3.20	1.5357
May	1.20	1.17	1.20	79	1.35	1.55	1.14	1.80	3.60	1.35		3.11	1.5381
June	1.20	1.15	1.20	79	1.35	1.55	1.15	1.75	4.80	1.33		3.10	1.5312
July	1.25	1.22	1.27	79	1.38	1.58	1.18	1.74	4.65	1.32		3.10	1.5692
August	1.30	1.26	1.30	79	1.38	1.61	1.25	1.85	4.40	1.37		3.10	1.6059
September .	1.33	1.33	1.35	79	1.54	1.69	1.28	1.91	3.68	1.51		3.10	1.6506
October	1.44	1.42	1.43	79	1.63	1.78	1.40	2.03	3.57	1.60		3.15	1.7264
November .	1.63	1.63	1.63	78	1.72	1.87	1.56	2.30	4.07	1.90		3.45	1.9089
December ..	1.75	1.75	1.75	78	1.88	2.03	1.70	2.53	4.75	2.26		3.60	2.0329
Year	1.30	1.29	1.31	79 $\frac{1}{4}$	1.48	1.66	1.27	1.94	3.85	1.49		3.19	1.6280
1916													
January	1.87	1.90	1.87	76 $\frac{3}{4}$	1.98	2.13	1.75	2.60	4.75	2.55		3.75	2.1410
February ...	2.06	2.16	2.06	75 $\frac{1}{2}$	2.11	2.26	1.94	2.60	4.80	2.65		3.83	2.2988
March	2.36	2.53	2.36	73 $\frac{3}{4}$	2.25	2.40	2.24	2.73	4.93	2.85		4.20	2.5579
April	2.50	2.75	2.50	71 $\frac{1}{2}$	2.25	2.40	2.35	2.89	5.00	2.95		4.70	2.7166
May	2.50	2.83	2.50	70	2.45	2.50	2.35	2.90	5.00	3.00		5.46	2.8043
June	2.50	2.90	2.50	70	2.45	2.50	2.35	2.90	4.80	3.00		5.75	2.8300
July	2.50	2.90	2.50	70	2.45	2.50	2.35	2.90	4.40	2.90		6.00	2.8425
August	2.54	2.94	2.56	70	2.53	2.58	2.35	2.90	4.20	2.90		5.54	2.8588
September .	2.60	3.00	2.60	69 $\frac{1}{4}$	2.55	2.60	2.35	2.91	4.20	2.90		5.75	2.9013
October	2.63	3.07	2.62	69	2.59	2.64	2.40	3.23	4.50	3.15		5.77	2.9747
November .	2.86	3.33	2.76	68 $\frac{1}{4}$	2.79	2.84	2.75	3.72	5.34	3.66		6.40	3.2036
December ..	3.03	3.53	2.93	66	2.95	3.00	2.85	4.40	6.27	3.65		7.18	3.4679
Year	2.50	2.82	2.48	70 $\frac{7}{8}$	2.45	2.53	2.24	3.06	4.85	2.99		5.34	2.8009
1917.													
January	3.11	3.61	3.00	66	2.95	3.00	2.85	4.50	6.50	4.25		7.23	3.5249

terial may be in the form of specific orders without its following that in the event of a general change in business conditions, as by the war's ending, for instance, the pressure for deliveries would continue of the same intensity. The buyers of the steel intend to retail it, or to manufacture it into goods, and even if the material is sold down to the ultimate consumer this ultimate consumer may relax his pressure and that relaxation would be carried back along the line to the steel mill.

The sellers assert that as to most of the transactions they have insisted with the buyer that the sale is to stand and that the buyer must take the material. Between a condition in which the buyer is harassing the seller to make better

deliveries and a condition in which the seller is reminding the buyer that the sale was an outright one, without reservations, it must be admitted there is a difference discernible to the least observing.

Pig Iron.

The pig iron market has worked itself into a very awkward position. Last August there were sales for the first half of this year at the market level that had existed for many months and then the market began advancing by leaps and bounds, with the buying still confined largely to this half year. A few purchases were made for the second half, enough to justify producers in assuming that they were safe in holding to the prices for all their remaining ton-

U. S. Steel Corporation's Operations.

Earnings and Unfilled Orders.

Earnings by Quarters.

Net earnings by quarters since 1911:

Quarter.	1916.	1915.	1914.
1st	\$60,713,624	\$12,457,809	\$17,994,382
2nd	81,126,048	27,950,055	20,457,596
3rd	85,817,067	38,710,644	22,276,002
4th	105,968,347	51,277,504	10,935,635
Year	333,625,086	130,396,012	71,663,615

	1913.	1912.	1911.
1st	\$34,426,802	\$17,826,973	\$23,519,203
2nd	41,219,813	25,102,266	28,108,620
3rd	38,450,400	30,063,512	29,522,725
4th	23,084,330	35,181,922	23,155,018
Year ...	137,181,345	108,174,673	104,305,466

Unfilled Orders.

(At end of the Quarter.)

	First.	Second.	Third.	Fourth.
1904..	4,136,961	3,192,277	3,027,436	4,696,203
1905..	5,579,560	4,829,655	5,865,377	7,605,086
1906..	7,018,712	6,809,584	7,936,884	4,489,718
1907..	8,043,858	7,603,878	6,425,008	4,642,553
1908..	3,765,343	3,313,876	3,421,977	3,603,527
1909..	3,542,590	4,057,939	4,796,833	5,927,031
1910..	5,402,514	4,237,794	3,158,106	2,674,757
1911..	3,447,301	3,361,058	3,611,317	5,084,761
1912..	5,304,841	5,807,346	6,551,507	7,932,164
1913..	7,468,956	5,807,317	5,003,785	4,282,108
1914..	4,653,825	4,032,857	3,787,667	3,836,643
1915..	4,255,749	4,678,196	5,317,608	7,805,220
1916..	9,331,001	9,640,458	9,522,584	11,547,286

Bookings and Shipments.

In this table, first two columns, percentages of bookings and shipments to total capacity, our own estimates, while last column is derived from official reports of "unfilled tonnage" while third percentage column is directly computed from this tonnage column.

	Ship-ments.	Book-ings.	Dif-ference.	Dif-ference.
	%	%	%	Tons.
1915--				
January ..	44	81	+37	+411,928
February ..	57	66	+ 9	+ 96,800
March	67	60	- 7	- 89,622
April	71	63	- 8	- 93,505
May	76	85	+ 9	+102,354
June	79	113	+34	+413,598
July	83	104	+21	+250,344
August	91	89	- 2	- 20,085
September .	98	133	+35	+409,163
October ...	103	172	+69	+847,834
November .	102	186	+84	+1,024,037
December .	102	152	+50	+615,731
1916--				
January ...	102	112	+10	+116,547
February ..	102	157	+55	+646,199
March	104	164	+60	+762,035
April	104	146	+42	+498,550
May	104	82	-22	-297,340
June	104	82	-22	-297,340
July	90	86	- 4	- 46,866
September .	96	87	- 9	-137,773
October ...	106	145	+39	+492,676
November .	104	189	+85	+1,043,282
December .	96	136	+40	+488,744

nage. Buying for second half soon ceased, however, and then pig iron for early delivery began to grow distinctly scarce, whereby in several of the markets further advances occurred on the business that was being done, this being confined almost exclusively to small lots for prompt shipment. As a rule the furnaces have taken the stand that whatever prices they have been able to obtain for prompt iron they should secure also for the second half, but the buyers have been taking no interest in that period. Buyers and sellers got so far apart that they could not hear each other if they did undertake to negotiate.

For deliveries they must have in the near future buyers will pay any price, but for later deliveries the market is altogether deadlocked. The plainest testimony to this is the fact that southern iron can be purchased for forward delivery to nearly all points in the country at many dollars per ton, delivered, less than the nominal asking prices of the northern furnaces in the various districts. For instance, for years southern iron was shut out of the Pittsburgh market almost continuously, but in January, second half foundry iron for Pittsburgh delivery could be purchased at

\$24, Birmingham, or \$28.55 delivered, probably at less, while \$30. valley, or \$30.95, Pittsburgh, had been the market until the valley furnaces started securing higher prices for prompt, and then they calmly asserted that in the event of being called upon to quote for second half they would not quote less than the prompt price. In some instances that would have meant \$35.95, or say \$7 a ton above the cost of southern iron.

Tin Plate Movement.

United States imports and exports of tin plate in gross tons have been as follows, the imports of course including those for drawback purposes:

	Imports.	Exports.
1906	56,983	12,082
1907	57,773	10,293
1908	58,490	11,878
1909	62,592	9,327
1910	66,640	12,459
1911	14,098	61,466
1912	2,053	81,694
1913	20,680	57,812
1914	15,411	59,549
1915	2,350	154,541
January, 1915	1,608	7,014
February	265	5,834
March	53	10,500
April	44	9,084
May	24	7,218
June	75	7,582
July	71	13,895
August	50	21,939
September	31	22,271
October	15	17,018
November	54	15,538
December	62	16,792
January, 1916	62	12,178
February	107	13,534
March	44	20,364
April	179	21,385
May	39	25,585
June	91	29,751
July	150	18,760
August	105	18,757
September	51	18,770
October	111	14,195
Ten months	936	193,322

Car and Locomotive Buying.

Freight Cars Ordered.

1915: Domestic	105,000	
Export	20,000	
Total, 1915		125,000
1916: Domestic	169,000	
Export	29,000	
Total, 1916		194,000
1917: Domestic	3,304	
Export	3,400	
January		16,840

Locomotives Ordered.

1915: Domestic	1,500	
Export	800	
Total, 1915		2,300
1916: Domestic	2,850	
Export	2,900	
Total, 1916		5,750
1917: Domestic	242	
Export	128	
January		766

Steel Demand of the Future.

The Lesson of Past Wars.

Probably we do not realize to what a clean page we have turned over, as to our thoughts and expectations as to the steel market. It is accident or coincidence that we turned over the leaf just as the new year came in. Usually we have a vague concept of "turning over a new leaf" with the new year and expect it to be different only to find, more often than not, that nothing has occurred after all. That was certainly the case a year ago. The steel market in the first three months of 1916 conducted itself much the same as it had in the three closing months of 1915.

Now we are in an absolutely new period in steel market history. The war is still in progress, but it is looked upon altogether differently. Just as, in the early weeks of the war men turned hopelessly one way and another asking "How long will it last?" and feeling that nothing would happen, nothing could be done, and then found that more could happen, more could be done, in a month of war than in a year of peace, so now men are realizing that a great deal will occur after the war. The stirring events will not cease. Gradually they are beginning to conclude that there can be good business after the war.

What is distinctive in all this is that men's minds change so rapidly and completely. First they take counsel of their fears and then of their judgment. To the majority, early in the war, it seemed utterly impossible that there could be any good business during the war. Soon they found themselves completely wrong. Then they felt that there could be no good business after the war. Many men have already changed their minds in that respect and more will follow in the next few weeks. It will be one of the results of turning over the new leaf, whereby men are in the mood to make a fresh appraisal of affairs.

In vain one will search the records

of the past for proof that great wars cause industrial prostration. They make men work harder. Everything is quickened. They go too strong a pace, perhaps, and then a crisis occurs, but the crisis is not the result of the war. It is the result of the strenuousness of the times that follow.

Great crises in the United States have occurred more often than not at 20-year intervals, as 1837 to 1857, and 1873 to 1893. From 1857 to 1873 was only 16 years. It may be said that it was our Civil War that shortened the period, but the fall of Richmond occurred in the autumn of 1864 and the surrender at Appomattox in the spring of 1865 and the crisis did not occur until September, 1873, and industry was active in that year. There was more than eight years of very good times, half the whole interval between the panics. Even the "Black Friday" of 1869, the gold panic, did not seriously interrupt the course of industry, although no one knew from day to day what the medium of exchange was going to be worth.

So with the Franco-Prussian war. The nation that had to pay a billion dollar indemnity prospered while doing it and only the nation that had its head turned by receiving the indemnity eventually suffered. The danger lies wholly in unwarrantable expansion, in men's heads being turned by prosperity. It is along these lines that thought will travel and crystallize in this new year 1917.

Apropos of the above analysis it may be noted that the First National Bank of Boston in its letter of January 16th, remarked: "While business men recognize the hazards of the present situation, more and more opinion is growing that, despite its frightfulness, the war is after all a normal war and that as in the past, active business is likely to continue both during the war and for several years after its termination."

The British Steel Industry.

On account of the censorship there has been very little information in detail as to what has been going on in the British steel industry. Even in the annual review of the "Iron and Coal Trades Review," London, in which the references are somewhat more specific than usual, one must read between the lines. It seems that practically the whole of the British iron and steel industry has been gradually brought under government control, and in large part by the initiative of the manufacturers.

The statistics of British imports and exports have been published as usual, and they have shown a large diminution in exports since last May, even though the exports to France have been quite large. It is clear now that the decrease is not due to decreased production, but to increased requirements at home. The total production of iron and steel has been increasing, and the 1916 output greatly exceeded that in 1915 if it did not make a new record, and we rather suspect that it did.

Nearly all the steel made in the United Kingdom now is for war purposes, first for shells and other use on the battlefield, and then nearly as large a tonnage for shipbuilding. It appears that during the fore part of 1916 the requirements of the navy were given first consideration, but that by the

middle of the year it became possible to devote more attention to furnishing steel for merchant vessels, whereby the output of the latter class has been greatly increased.

Not only is the British iron and steel industry producing finished steel ready for use, it is also supplying a great deal of partly finished product for England's allies, particularly France. There have been exports to Russia, though not in large tonnages, even through November.

It appears that in the changes that have been made in the British iron and steel industry, necessitated by the war, there has been, particularly of late, keen attention paid to the requirements that will follow the declaration of peace and much of the work that has been done has been planned directly to furnish facilities whereby the works of peace can be served.

There is reason to suspect that the English have found that the German steel industry was much more readily convertible into the pursuit of war than was the case, at the outset, with the British industry. There is, indeed, a suggestion in our London contemporary that the British steel industry has had to make preparations, during two years of war, that the German steel industry made during two decades of peace.

Lake Superior Iron Ore.

Shipments of iron ore down the lakes have been as follows, in gross tons:

	1911.	1912.	1913.	1914.	1915.	1916.
April	331,645	204,042	866,386	269,686	503,832	1,658,411
May	3,684,819	5,919,074	7,284,212	3,852,063	5,012,359	8,449,580
June	4,819,996	7,567,555	7,974,444	5,502,367	6,005,591	9,507,576
July	5,221,373	7,600,233	8,204,416	5,784,514	7,204,021	9,750,157
August	5,548,311	7,760,248	7,677,801	5,869,477	8,081,117	9,850,140
September	5,231,069	7,287,230	7,258,413	5,438,049	7,863,146	9,600,786
October	4,769,965	7,010,219	6,526,103	4,242,392	7,146,873	9,116,196
November	2,523,253	4,072,674	3,270,958	1,068,682	4,445,129	5,715,452
December		14,579	18,545	1,411	57,286	1,085,900
Season Lake ..	32,130,411	47,435,777	49,070,478	32,021,987	46,318,804	64,734,198

Comparison of Security Prices.

	Range for 1914		Range for 1915		Range for 1916		Closing,
	High.	Low.	High	Low.	High.	Low.	Jan. 31, 1917.
Iron and Industrial Stocks.							
Allis-Chalmers Mfg.	49 ¹ / ₈	73 ¹ / ₄	38	19	29	21 ¹ / ₈	28
Allis-Chalmers Mfg. pfd.	85 ⁷ / ₈	33	92	50 ¹ / ₄	85 ¹ / ₄	81 ¹ / ₄	84 ¹ / ₂
American Can.	68 ¹ / ₂	25	68 ¹ / ₂	44	51 ¹ / ₂	37 ⁵ / ₈	47 ⁵ / ₈
American Can pfd.	113 ¹ / ₂	89	115 ⁵ / ₈	107 ⁵ / ₈	110 ⁵ / ₈	107	110
American Car & Fdy.	98	40	78 ¹ / ₂	52	69 ⁷ / ₈	58 ⁷ / ₈	67
American Locomotive.	73 ³ / ₄	19	98 ¹ / ₄	58	82 ¹ / ₄	62 ¹ / ₄	75 ³ / ₈
American Smelt'g & Refining	108 ⁷ / ₈	56	123 ³ / ₄	88 ¹ / ₂	110 ¹ / ₄	94 ⁵ / ₈	106
American Steel Foundries	74 ¹ / ₂	24 ³ / ₈	73	44	63	55 ¹ / ₈	61 ⁷ / ₈
American Zinc, Lead & Smelt'g	71	67 ¹ / ₄	97 ⁷ / ₈	29 ³ / ₈	41 ³ / ₈	31 ¹ / ₄	39
Anaconda Copper.	91 ⁵ / ₈	49 ¹ / ₂	105 ⁵ / ₈	77	86 ³ / ₈	70	82 ¹ / ₂
Baldwin Locomotive.	154 ¹ / ₂	26 ⁵ / ₈	118 ⁵ / ₈	52	62	45	54 ¹ / ₄
Bethlehem Steel.	600	46 ¹ / ₄	700	415	515	363	401
Bethlehem Steel pfd.	184	91	168	126	135	123	123
Chino Copper.	57 ³ / ₈	32 ³ / ₄	74	46 ¹ / ₈	56 ¹ / ₂	49	55
Colo. Fuel & Iron Co.	66 ¹ / ₂	21 ³ / ₄	63 ¹ / ₄	38 ¹ / ₈	49 ¹ / ₄	38 ¹ / ₄	46 ¹ / ₂
Crucible Steel.	109 ⁷ / ₈	18 ¹ / ₄	99 ¹ / ₂	50 ¹ / ₄	68 ³ / ₄	50 ¹ / ₄	61 ¹ / ₂
Crucible Steel pfd.	112 ¹ / ₂	84	124 ⁷ / ₈	108 ¹ / ₄	117 ¹ / ₄	110 ¹ / ₈	115
Driggs-Seabury. ....	...	...	119 ³ / ₄	45 ¹ / ₈	56	39 ⁷ / ₈	45
General Electric.	185 ¹ / ₂	138	187 ¹ / ₄	159	171 ³ / ₄	161 ⁵ / ₈	168 ¹ / ₂
Granby Consolidated.	91	79 ¹ / ₄	120	80	92 ³ / ₈	77 ¹ / ₄	88
Great Northern Ore Prop. ...	54	25 ¹ / ₄	50 ³ / ₄	32	38	28 ¹ / ₄	35 ¹ / ₂
Gulf States Steel. ....	...	...	193	71	137	105	120
International Harv. of N. J.	114	90	126 ⁷ / ₈	108 ¹ / ₂	123	114	120 ¹ / ₂
Inter. Harv. of N. J., pfd.	120	100	122	114	121	118	121
International Harv. Corp.	85	55	90 ¹ / ₄	68 ¹ / ₈	88	81 ¹ / ₄	84
Inter. Harv. Corp. pfd.	114	90 ¹ / ₂	114 ³ / ₄	104 ⁷ / ₈	114	112 ³ / ₄	113 ¹ / ₂
Lackawanna Steel.	94 ³ / ₄	28	107	64	89 ¹ / ₄	72	81
National Enam. & Stamp. ...	36 ¹ / ₈	9 ¹ / ₂	36 ¹ / ₂	19 ¹ / ₄	32 ³ / ₄	25	30 ³ / ₄
National Enam. & Stamp. pfd.	97	79	100 ¹ / ₂	90 ¹ / ₈	98	96	96
National Lead.	50 ¹ / ₄	44	74 ⁵ / ₈	57	61 ¹ / ₂	53 ¹ / ₂	59 ¹ / ₄
National Lead pfd.	115	104 ³ / ₄	117 ¹ / ₈	111 ¹ / ₄	114	113 ¹ / ₄	113
New York Air Brake.	164 ³ / ₄	56 ¹ / ₂	186	118	155	135	152
Pressed Steel Car.	78 ¹ / ₄	25	88 ¹ / ₄	42 ¹ / ₂	83 ¹ / ₄	72 ¹ / ₈	79 ³ / ₄
Pressed Steel Car pfd.	106	86	108	98 ¹ / ₂	106	100 ¹ / ₂	107
Railway Steel Spring.	54	19	61 ¹ / ₄	32	53 ¹ / ₄	43	50 ¹ / ₂
Railway Steel Spring pfd.	102	86 ¹ / ₂	104 ¹ / ₄	95 ¹ / ₄	101	100	101
Ray Consolidated Copper	27 ¹ / ₂	15 ¹ / ₄	37	20	28 ¹ / ₂	23	26 ⁵ / ₈
Republic Iron & Steel.	57 ¹ / ₄	19	93	42	83 ⁵ / ₈	60	76 ¹ / ₄
Republic Iron & Steel pfd. ...	112 ⁵ / ₈	72	117	101	105 ³ / ₄	99	103
Sloss Sheffield.	66 ⁷ / ₈	22	93 ¹ / ₄	37	71	50	62
Sloss Sheffield pfd.	102	85	103 ¹ / ₂	91 ¹ / ₂	96 ¹ / ₂	96 ¹ / ₂	96 ¹ / ₂
Texas Company.	237	120	241 ¹ / ₂	174 ¹ / ₄	243	204 ¹ / ₂	228
U. S. Cast Iron Pipe.	317 ⁵ / ₈	8	28 ¹ / ₂	16 ³ / ₈	23 ¹ / ₂	17	22
U. S. Cast Iron Pipe pfd.	55 ¹ / ₂	32 ¹ / ₂	67 ¹ / ₂	48 ¹ / ₂	62 ³ / ₄	54	61
U. S. Smelting & Refining. ...	...	...	81 ¹ / ₂	57	67 ³ / ₄	54 ³ / ₈	62 ¹ / ₄
U. S. Smelting & Refining pfd.	...	...	53 ¹ / ₂	50	52 ¹ / ₄	51 ¹ / ₂	51 ¹ / ₂
U. S. Steel Corporation.	89 ¹ / ₂	58	120 ³ / ₄	79 ³ / ₄	115 ⁷ / ₈	99	112 ⁵ / ₈
U. S. Steel Corporation pfd.	117	102	123	115	121 ¹ / ₄	117	120 ⁵ / ₈
Utah Copper.	81 ¹ / ₄	48 ¹ / ₄	130	74 ¹ / ₄	109	97	111 ¹ / ₄
Virginia Iron, Coal & Coke. ...	71	36	72 ³ / ₄	41	59	46 ¹ / ₄	51
Westinghouse Elec. & Mfg. ...	74 ⁵ / ₈	32	71 ⁵ / ₈	51 ¹ / ₄	55 ³ / ₈	47 ¹ / ₄	52 ³ / ₄

Comparison of Metal Prices.

	Range for 1914		Range for 1915		Range for 1916		Closing, Jan. 31, 1917.
	High.	Low.	High.	Low.	High.	Low.	
Pig Iron							
Bessemer, valley	21.00	13.60	25.00	20.00	25.00	25.00	35.00
Basic, valley	18.00	12.50	30.00	17.75	30.00	20.00	30.00
No. 2 foundry, valley	18.50	12.50	30.00	18.25	30.00	20.00	30.00
No. 2X idy, Philadelphia ..	19.50	14.00	30.75	19.50	31.75	20.75	31.75
No. 2 foundry, Cleveland ..	18.50	13.00	30.95	18.50	30.95	20.95	30.95
No. 2X foundry, Buffalo ..	18.00	11.75	35.00	18.00	35.00	25.00	35.00
No. 2 foundry, Chicago	18.50	13.00	30.00	18.00	30.00	30.00	30.00
No. 2 South'n Birmingham	14.50	9.25	25.00	14.00	25.00	24.00	24.00
Scrap Iron and Steel.							
Melting steel, Pittsburgh ..	18.00	11.00	27.00	16.00	24.50	22.50	22.50
Heavy steel scrap, Phila. ..	16.25	9.50	24.50	14.75	23.50	22.25	22.25
Heavy melt. steel, Chicago ..	15.25	8.75	24.00	14.50	24.00	24.00	24.00
No. 1 R. R. wrought, Pitts. .	17.25	10.75	29.00	17.50	25.50	22.50	22.50
No. 1 cast, Pittsburgh	15.00	9.00	23.50	14.75	22.50	19.75	19.75
Iron and Steel Products.							
Bessemer rails, mill	28.00	28.00	38.00	28.00	38.00	38.00	38.00
Iron bars, Pittsburgh	1.90	1.20	3.25	1.90	3.25	3.25	3.25
Iron bars, Philadelphia	2.06	1.12½	3.16	2.06	3.16	3.16	3.16
Steel bars, Pittsburgh	1.80	1.10	3.00	1.85	3.00	3.00	3.00
Tank plates, Pittsburgh	1.60	1.10	3.00	1.85	3.75	3.60	3.60
Structural shapes, Pitts. ..	1.80	1.10	3.10	1.85	3.25	3.10	3.10
Grooved steel skelp, Pitts. .	1.75	1.12½	2.85	1.75	2.85	2.85	2.85
Black sheets, Pittsburgh	2.60	1.70	4.50	2.60	4.50	4.50	4.50
Galv. sheets, Pittsburgh ..	5.00	2.65	6.50	4.15	6.50	6.25	6.50
Tin plate, Pittsburgh	3.60	3.10	7.50	3.75	7.50	7.00	7.00
Wire nails, Pittsburgh	2.10	1.50	3.00	2.10	3.00	3.00	3.00
Steel pipe, Pittsburgh	79%	81%	64%	78%	64%	64%	64%
Connellsville Coke at ovens.							
Prompt furnace	3.50	1.50	12.00	2.50	12.00	8.00	9.25
Prompt foundry	3.75	2.00	12.00	3.25	12.00	10.00	11.00
Metals—New York.							
Straits tin	57.00	32.00	56.00	37.50	45.85	42.50	45.85
Lake copper	23.00	13.00	35.00	23.00	32.25	28.00	32.00
Electrolytic copper	23.00	12.80	36.00	23.00	33.50	27.75	32.00
Casting copper	22.00	12.70	34.00	22.00	29.75	26.50	29.50
Sheet copper	27.25	18.75	42.00	28.00	.....	.....	.....
Lead (Trust price)	7.00	3.70	7.50	5.50	8.00	7.50	8.00
Spelter	27.25	5.70	31.17½	8.37½	11.05	9.17½	10.55
Chinese & Jap. antimony ..	40.00	13.00	45.00	10.50	25.00	14.25	25.00
Aluminum, 98.20%	60.00	18.75	67.00	53.00	64.00	56.00	59.00
Silver	56½	46¼	77¼	55½	77.00	74¼	76¼
St. Louis.							
Lead	7.50	3.50	8.25	5.45	8.25	7.30	8.18¾
Spelter	27.00	5.55	31.00	8.20	10.87½	9.00	10.37½
Sheet zinc (local smelter) ..	32.00	9.00	25.50	15.00	.....	.....	.....
London							
Standard tin, prompts	£ 190	£ 148½	£ 205	£ 161½	£ 193	£ 183¼	£ 193
Standard copper, prompts ..	£ 86¾	£ 77½	£ 153	£ 84	£ 134	£ 130	£ 134
Lead	£ 20½	£ 18½	£ 36½	£ 27¾	£ 30	£ 30½	£ 30½
Spelter	£ 110	£ 28½	£ 110	£ 44	£ 50	£ 45½	£ 47
Silver	£ 27¼d	£ 22½d	£ 37d	£ 26½d	£ 37½d	£ 36d	£ 37½d

Railroad Earnings.

Railroad earnings per mile of road, of roads having annual operating revenues above \$1,000,000, this being about 230,000 miles or about 90% of the total steam railway mileage; compiled by the Bureau of Railway Economics from reports furnished the Interstate Commerce Commission.

1913-14				1914-15				1915-16			
	Revenue.	Expenses.	Net.	Revenue.	Expenses.	Net.	Revenue.	Expenses.	Net.		
July	\$1,183	\$837	\$346	\$1,127	\$786	\$341	\$1,130	\$750	\$380		
August ..	1,244	856	388	1,174	788	386	1,190	764	426		
September	1,257	854	403	1,185	783	402	1,251	774	477		
October ..	1,314	891	423	1,171	787	384	1,323	815	508		
November	1,180	884	337	1,026	734	292	1,303	800	503		
December	1,116	821	296	993	730	263	1,253	802	451		
January ..	1,021	795	225	939	718	221	1,133	797	336		
February .	914	746	168	900	680	220	1,140	800	340		
March	1,091	801	290	1,015	722	293	1,260	844	416		
April	1,038	782	256	1,013	724	289	1,223	827	396		
May	1,047	800	247	1,044	735	309	1,307	857	450		
June	1,097	789	308	1,094	732	362	1,302	851	451		
Fiscal year	13,483	9,801	3,682	12,678	8,915	3,763	14,818	9,684	5,134		

1916-17			
	Revenue.	Expenses.	Net.
July	\$1,315	\$848	\$467
August ..	1,418	882	536
September	1,409	881	528
October .	1,466	910	556

Wage Scale Averages.

Sworn averages of prices obtained by mills for shipments in months named, used in fixing wages under Amalgamated Association sliding scales. The figures represent the rates used, the actual ascertained averages lying between the figure given and the one five points higher. Base sizes of iron bars; average of 26, 27 and 28 gauges black sheets; tin plate per base box, 100-pound.

Bar Iron.

	1914.	1915.	1916.
January-February.	1.1590	1.024	1.40
March-April	1.176	1.087	1.60
May-June	1.1257	1.10	1.85
July-August	1.0928	1.15	1.95
September-October	1.0847	1.15	2.00
November-December	1.037	1.30	....
Year's average	1.1125	1.144	....

Sheets and Tin Plates.

1916.	Sheets.	Tin Plates.
January-February	2.25	3.50
March-April	2.50	3.70
May-June	2.60	3.90
July-August	2.70	4.05
September-October	2.75	4.10

Pig Iron Production.

Rates per annum, including charcoal pig.

August, 1915	31,800,000
September	35,000,000
October	37,100,000
November	37,350,000
December	38,000,000
January, 1916	37,850,000
February	39,200,000
March	39,600,000
April	39,600,000
May	39,800,000
June	39,500,000
July	38,350,000
August	39,200,000
September	39,300,000
October	41,700,000
November	40,700,000
December	37,700,000
On January 1st	37,000,000

Actual production:

1910	27,803,567
1913	30,966,152
1914	23,332,244
1915	29,916,213

Composite Steel.

Computation for February 1, 1917:

Pounds.	Group.	Price.	Extension.
2½	Bars	3.00	7.500
1½	Plates	3.75	5.625
1½	Shapes	3.25	4.875
1½	Pipe (¾-)	3.55	5.325
1½	Wire nails	3.00	4.500
1	Sheets (28 bl.)	4.50	4.500
½	Tin plates	7.00	3.500
10 pounds			35.825

One pound 3.5825

Averaged from daily quotations:

	1913.	1914.	1915.	1916.	1917.
Jan.	1.7737	1.5394	1.4554	2.1410	3.552
Feb.	1.7625	1.5794	1.4716	2.2988	
Mar.	1.7646	1.5638	1.5098	2.5579	
April	1.7742	1.5337	1.5357	2.7165	
May	1.7786	1.5078	1.5381	2.8043	
June	1.7719	1.4750	1.5312	2.8300	
July	1.7600	1.4805	1.5692	2.8425	
Aug.	1.7400	1.5241	1.6059	2.8588	
Sept.	1.7093	1.5632	1.6506	2.9013	
Oct.	1.6779	1.5236	1.7264	2.9747	
Nov.	1.6203	1.4769	1.9089	3.2036	
Dec.	1.558	1.4324	2.0329	3.4679	
Year	1.7241	1.5182	1.6280	2.8009	

Scrap Iron and Steel Prices.

Melting Steel. Bundled Sheet. No. 1 R. R. No. 1 No. 1 Heavy
Pitts. Pitts. Pitts. Pitts. Phila. Ch'go.

1915—					
May	11.65	9.37	10.75	11.85	11.25 9.50
June	11.75	9.37	10.75	11.85	11.25 9.75
July	12.62	9.60	11.00	12.00	11.85 10.90
Aug.	14.05	11.40	12.25	12.85	13.70 11.85
Sep.	14.25	11.90	13.15	13.10	14.70 12.15
Oct.	14.50	12.00	13.75	13.35	14.50 12.00
Nov.	16.12	12.55	15.35	13.90	14.65 13.95
Dec.	17.65	13.15	17.10	14.95	15.60 15.25
Year	13.25	10.54	12.26	12.40	12.54 10.90
1916—					
Jan.	17.75	13.40	18.00	15.10	16.30 15.60
Feb.	17.20	13.60	18.75	15.35	16.25 15.75
Mar.	18.40	14.80	19.15	15.75	17.15 16.75
Apr.	18.00	14.75	19.25	16.00	18.00 16.75
May	17.00	13.65	19.65	16.10	17.00 15.90
June	16.25	13.00	19.00	15.40	15.45 14.80
July	16.70	12.50	18.80	15.30	15.00 14.30
Aug.	16.25	11.70	18.15	15.00	15.00 15.30
Sep.	16.61	11.65	18.35	15.00	15.00 16.00
Oct.	18.25	11.65	19.30	15.80	15.65 17.35
Nov.	21.50	13.75	21.25	17.75	18.25 21.00
Dec.	25.50	16.00	27.20	21.40	23.95 23.65
Year	18.37	13.38	19.73	16.16	16.92 16.90
1917—					
Jan.	23.50	16.25	23.75	20.75	22.75 23.50

Composite Pig Iron.

Computation for February 1, 1917:

One ton Bessemer, valley	\$35.00
Two tons basic, valley (30.00)	60.00
One ton No. 2 foundry, valley	30.00
One ton, No. 2 foundry, Philadelphia	31.75
One ton No. 2 foundry, Buffalo	35.25
One ton No. 2 foundry, Cleveland	30.95
One ton No. 2 foundry, Chicago	30.50
Two tons No. 2 Southern, Foundry	
Cincinnati (26.90)	53.80
Total, ten tons	307.25

One ton 30.725

Averaged from daily quotations:

	1913.	1914.	1915.	1916.	1917.
Jan.	17.391	13.492	13.070	18.690	30.752
Feb.	17.140	13.721	13.079	18.564	
Mar.	16.775	13.843	12.971	18.857	
April	16.363	13.850	12.914	19.021	
May	15.682	13.808	13.206	18.965	
June	14.968	13.606	13.047	18.552	
July	14.578	13.520	13.125	18.585	
Aug.	14.565	13.516	14.082	18.514	
Sept.	14.692	13.503	14.895	18.697	
Oct.	14.737	13.267	15.213	20.192	
Nov.	14.282	13.047	16.398	25.243	
Dec.	13.838	13.073	17.987	30.082	
Year	15.418	13.520	14.150	20.306	

Unfinished Steel and Iron Bars.

(Averaged from daily quotations.)

Billets.	Sheet Bars.	Rods.	—Iron bars, deliv.—		
Pitts.	Pitts.	Pitts.	Phila.	Pitts.	Ch'go.
1915—					
July	21.40†	21.90†	25.75	1.32	1.20 1.20
Aug.	23.50†	24.00†	27.00	1.43	1.25 1.22
Sep.	26.50†	26.00†	29.75	1.49	1.34 1.30
Oct.	26.00†	26.00†	31.50	1.57	1.45 1.38
Nov.	26.20†	26.50†	36.00	1.72	1.54 1.51
Dec.	30.73†	30.73†	39.50	1.99	1.83 1.69
Year	13.26	10.54	12.26	12.40	12.54 10.90
1916—					
Jan.	32.50†	32.50†	42.00	2.24	2.02 1.79
Feb.	34.00†	34.00†	48.00	2.41	2.25 1.92
Mar.	41.00†	41.00†	56.00	2.56	2.40 2.17
Apr.	45.00	45.00	60.00	2.62	2.50 2.35
May	43.00	43.00	59.00	2.66	2.60 2.35
June	42.00†	42.00†	58.00	2.66	2.60 2.35
July	42.50†	42.50†	58.00	2.66	2.60 2.35
Aug.	46.00	46.00	58.00	2.66	2.60 2.35
Sep.	47.00	45.00	58.00	2.66	2.70 2.35
Oct.	48.00	48.00	59.00	2.66	2.75 2.35
Nov.	52.75	54.00	65.00	2.66	2.85 2.50
Dec.	56.96	56.96	70.00	3.02	3.19 2.89
Year	44.23	44.17	57.58	2.57	2.59 2.31
1917—					
Jan.	63.50	63.50	75.00	3.16	3.25 3.00

† Premium for open-hearth.

Price Changes of Iron and Steel Products From October 26, 1915 to Date.

Price changes in merchant bars, structural shapes, plates, wire nails, merchant pipe, sheets and tin plates are given below, with dates. These are the commodities used in compiling our **composite finished steel**. In some cases the dates named are those upon which prominent producers announced price changes, but more frequently the rates are merely those upon which our quotations were changed. A few other price changes are included.

1915—				1916—			
Oct. 26	Plates	1.45	to 1.50	Jan. 21	Pipe	77%	to 76%
" 26	Shapes	1.45	to 1.50	" 24	Wire nails	2.10	to 2.20
" 28	Blue ann. sheets	1.65	to 1.70	Feb. 7	Bars	1.90	to 2.00
" 29	Boiler tubes	71%	to 69%	" 7	Plates	2.00	to 2.10
Nov. 1	Steel pipe	79%	to 78%	" 7	Shapes	1.90	to 2.00
" 1	Galvanized sheets	3.50	to 3.60	" 14	Wire nails	2.20	to 2.30
" 4	Black sheets	2.10	to 2.20	" 15	Pipe	76%	to 75%
" 4	Galvanized sheets	3.60	to 3.70	" 21	Bars	2.00	to 2.25
" 4	Bars	1.50	to 1.60	" 21	Plates	2.10	to 2.35
" 12	Tin plate	3.30	to 3.60	" 21	Shapes	2.00	to 2.25
" 12	Sheets	2.20	to 2.25	" 21	Tin plate	3.75	to 4.00
" 15	Sheets	2.25	to 2.40	" 29	Pipe	75%	to 74%
" 15	Galvanized sheets	3.80	to 4.00	" 29	Boiler tubes	64%	to 63%
" 15	Blue ann. sheets	1.80	to 2.00	Mar. 1	Wire nails	2.30	to 2.40
" 16	Wire nails	1.85	to 1.90	" 8	Black sheets	2.60	to 2.75
" 18	Bars	1.60	to 1.70	" 8	Blue ann. sheets	2.65	to 2.90
" 18	Plates	1.60	to 1.70	" 13	Bars	2.25	to 2.35
" 18	Shapes	1.60	to 1.70	" 13	Plates	2.35	to 2.60
" 18	Galvanized sheets	4.00	to 4.25	" 13	Shapes	2.25	to 2.35
" 24	Galvanized sheets	4.25	to 4.50	" 15	Steel pipe	74%	to 73%
" 30	Sheets	2.40	to 2.50	" 15	Boiler tubes	63%	to 61%
" 30	Galvanized sheets	4.50	to 4.75	" 23	Bars	2.35	to 2.50
" 30	Blue ann. sheets	2.00	to 2.25	" 23	Shapes	2.35	to 2.50
Dec. 1	Wire nails	1.90	to 2.00	" 28	Plates	2.60	to 2.75
" 1	Boiler tubes	69%	to 68%	" 29	Sheets	2.75	to 2.85
" 15	Bars	1.70	to 1.80	" 29	Steel pipe	73%	to 72%
" 15	Plates	1.70	to 1.80	" 29	Boiler tubes	61%	to 60%
" 15	Shapes	1.70	to 1.80	April 5	Sheets	2.85	to 2.90
" 21	Wire nails	2.00	to 2.10	" 15	Boiler tubes	60%	to 56%
" 21	Sheets	2.50	to 2.60	" 19	Tin plate	4.50	to 5.00
1916—				" 24	Pipe	72%	to 70%
Jan. 3	Tin plate	3.60	to 3.75	May 1	Wire nails	2.40	to 2.50
" 3	Blue ann. sheets	2.25	to 2.35	" 3	Tin plates	5.00	to 5.50
" 4	Bars	1.80	to 1.85	" 16	Plates	2.75	to 2.90
" 4	Plates	1.80	to 1.85	June 7	Galv. sheets	5.00	to 4.75
" 4	Shapes	1.80	to 1.85	" 16	Tin plate	5.50	to 6.00
" 4	Pipe (with extra			July 7	Blue ann. sheets	3.00	to 2.90
	2 1/2%)	78%	to 77%	" 7	Galv. sheets	4.75	to 4.50
" 5	Blue ann. sheets	2.35	to 2.40	Aug. 1	Tin plate	6.00	to 5.50
" 7	Boiler tubes	68%	to 66%	" 7	Wire nails	2.50	to 2.60
" 12	Blue ann. sheets	2.40	to 2.50	" 15	Bars	2.50	to 2.60
" 14	Boiler tubes	66%	to 64%	" 18	Shapes	2.50	to 2.60
" 19	Blue ann. sheets	2.50	to 2.65	" 18	Plates	2.90	to 3.00
" 21	Bars	1.85	to 1.90	" 25	Galv. sheets	4.25	to 4.15
" 21	Plates	1.85	to 2.00	Sept. 7	Pipe	70%	to 69%
" 21	Shapes	1.85	to 1.90	" 7	Boiler tubes	56%	to 54%

Sept. 20	Galv. sheets	4.15	to 4.25
" 28	Sheets	2.90	to 3.00
Oct. 3	Blue ann. sheets	2.90	to 3.00
" 3	Galv. sheets	4.25	to 4.30
" 6	Sheets	3.00	to 3.10
" 7	Tin plate	5.50	to 6.00
" 13	Sheets	3.10	to 3.25
" 13	Galv. sheets	4.30	to 4.40
" 13	Tin plate	6.00	to 5.75
" 16	Galv. sheets	4.40	to 4.50
" 19	Wire nails	2.60	to 2.70
" 20	Sheets	3.25	to 3.35
" 20	Blue ann. sheets	3.00	to 3.15
" 24	Plates	3.00	to 3.25
" 25	Bars	2.60	to 2.70
" 25	Shapes	2.60	to 2.70
" 25	Grooved skelp	2.35	to 2.50
" 26	Sheets	3.35	to 3.40
" 26	Galv. sheets	4.50	to 4.75
" 27	Blue ann. sheets	3.15	to 3.30
" 30	Tin plate	5.75	to 6.00
" 31	Shapes	2.70	to 2.80
Nov. 1	Boiler tubes	54%	to 52%
" 6	Wire nails	2.70	to 2.85
" 8	Sheets	3.40	to 3.65
" 15	Tin plate	6.00	to 6.25
" 15	Grooved skelp	2.50	to 2.60
" 15	Pipe	69%	to 68%
" 18	Galv. sheets	5.00	to 5.50
" 20	Tin plate	6.25	to 7.00
" 20	Sheets	3.65	to 4.00
" 21	Bars	2.70	to 2.90
" 21	Plates	3.25	to 3.50
" 21	Shapes	2.80	to 3.00
" 21	Blue ann. sheets	3.30	to 3.40
" 21	Boiler tubes	52%	to 46%
" 25	Grooved skelp	2.60	to 2.85
" 27	Blue ann. sheets	3.40	to 3.50
" 27	Galv. sheets	5.50	to 5.75
" 27	Wire nails	2.85	to 3.00
Dec. 4	Pipe	68%	to 66%
" 4	Sheets	4.00	to 4.25
" 5	Galv. sheets	5.75	to 6.00
" 6	Blue ann. sheets	3.50	to 3.65
" 11	Sheets	4.25	to 4.50
" 11	Galv. sheets	6.00	to 6.25
" 20	Tin plate	7.00	to 7.50
" 21	Bars	2.90	to 3.00
" 21	Shapes	3.00	to 3.10
" 21	Plates	3.50	to 3.60
" 26	Blue ann. sheets	3.75	to 4.00
" 30	Pipe	66%	to 64%
1917—			
Jan. 10	Galv. sheets	6.25	to 6.50
" 10	Blue ann. sheets	4.00	to 4.25
" 16	Tin plate	7.00	to 7.50
" 30	Shapes	3.10	to 3.25
" 30	Plates	3.60	to 3.75

Steel Making Pig Iron Averages.

Bessemer and basic pig iron averages, compiled by W. P. Snyder & Company from sales in the valley market of 1,000 tons and over.

	Bessemer.	Basic.
	1916.	1917.
Jan. ..	\$20,645	\$35.00
Feb. ..	20,2136	17.984
Mar. ..	20,8625	18.25
April ..	20.70	18.00
May ..	20,833	18.1607
June ..	21.00	18.00
July ..	21.00	18.00
Aug. ..	21.00	18.00
Sept. ..	21,9346	18.63
Oct. ...	23.6576	20.3086
Nov. ..	29.12	27.229
Dec. ..	34.213	30.00
Year ..	22,9316	20,0229

Above prices are f. o. b. valley furnace; delivered Pittsburgh is 95 cents higher.

British Iron And Steel Exports.

	Pig Iron.	Rails.	Tin Plate.	Total.*
1912 ..	1,262,383	407,175	481,123	4,933,112
1913 ..	1,124,181	500,117	494,497	5,049,090
1914 ..	780,763	433,507	435,392	3,972,348
1915 ..	611,227	242,267	368,778	3,248,046
1915—				
June ..	39,127	23,728	33,986	272,195
July ..	78,370	33,224	39,528	351,984
Aug. ..	73,283	32,962	22,572	295,260
Sept. ..	53,068	15,800	20,002	249,501
Oct. ..	78,973	13,640	31,968	312,141
Nov. ..	86,109	12,760	25,556	308,319
Dec. ..	74,892	9,937	30,641	259,782
Year ..	611,227	242,267	368,778	3,248,046
1916—				
Jan. ..	78,271	3,151	26,271	292,203
Feb. ..	84,351	3,905	27,289	283,250
Mar. ..	87,283	3,366	30,461	307,488
April ..	82,976	10,510	23,337	293,897
May ..	97,967	4,103	41,868	395,750
June ...	77,487	3,243	30,351	310,595
July ...	69,999	3,485	38,174	298,929
Aug. ..	95,655	1,983	34,124	319,928
Sept. ..	72,683	2,712	19,226	231,335
Oct. ..	72,187	6,929	10,929	241,261
Nov. ..	49,986	16,411	4,571	224,554
Dec. ..	48,542	2,317	14,248	158,609
Year ..	917,396	50,215	321,710	3,357,820

* Includes scrap, pig iron, rolled iron and steel, cast and wrought iron manufactures, bolts, nuts, etc., but not finished machinery, boilers, tools, etc.

Iron and Steel Imports and Exports.

Value of Tonnage and Non-Tonnage.

	1911.	1912.	1913.	1914.	1915.	1916.
January	\$18,738,391	\$18,451,914	\$25,141,409	\$16,706,836	\$18,053,421	\$51,643,807
February	18,690,792	21,801,570	24,089,871	16,550,260	16,470,751	54,155,386
March	22,591,991	24,474,799	27,221,210	20,551,137	20,985,505	58,300,297
April	24,916,912	26,789,853	27,123,044	20,639,569	25,302,649	58,722,411
May	20,616,795	28,050,247	26,718,970	19,734,045	26,536,612	72,918,913
June	20,310,053	24,795,802	25,228,346	18,927,958	31,730,132	76,257,884
July	17,454,772	24,917,952	24,170,704	16,737,552	35,892,106	70,745,162
August	20,013,557	25,450,107	23,947,440	10,428,817	37,726,657	86,296,703
September ...	19,875,308	23,286,040	22,831,082	12,531,102	38,522,175	90,895,592
October	20,220,833	25,271,559	25,193,887	16,455,832	43,299,457	82,010,972
November ...	20,823,061	26,406,425	20,142,141	15,689,401	48,056,220	77,570,840
December ...	22,186,996	23,750,864	22,115,701	14,939,613	45,825,277	.....
Totals ...	\$249,656,411	\$289,128,420	\$293,934,160	\$199,861,684	\$388,703,720	\$778,623,250

Exports of Tonnage Lines,---Gross Tons.

	1909.	1910.	1911.	1912.	1913.	1914.	1915.	1916.
January	70,109	118,681	152,262	151,575	249,493	118,770	140,550	357,122
February	84,837	110,224	150,919	204,969	241,888	121,206	139,946	368,867
March	94,519	124,980	216,360	218,219	257,519	159,998	174,104	438,058
April	100,911	117,921	228,149	267,313	259,689	161,952	223,587	384,924
May	109,808	135,306	178,589	307,656	242,353	139,107	263,113	540,549
June	114,724	120,601	174,247	273,188	243,108	144,539	356,431	526,772
July	100,850	127,578	162,855	272,778	237,159	114,790	380,336	503,685
August	105,690	131,391	177,902	282,645	209,856	86,599	405,952	597,750
September	97,641	119,155	181,150	248,613	213,057	96,476	382,118	643,767
October	110,821	129,828	186,457	251,411	220,550	147,293	349,848	610,125
November	116,105	155,138	187,554	233,342	175,961	140,731	362,766	554,859
December	137,806	150,102	190,854	235,959	181,715	117,827	353,840	.....
Totals	1,243,567	1,540,895	2,187,724	2,948,466	2,730,681	1,549,543	3,532,432	5,526,478

Iron Ore Imports.

	1913.	1914.	1915.	1916.
Jan. .	175,463	101,804	75,286	89,844
Feb. .	188,734	112,574	78,773	93,315
Mar. .	164,865	68,549	88,402	93,383
April. .	174,162	111,812	91,561	75,712
May .	191,860	125,659	98,974	148,599
June .	241,069	188,647	118,575	134,154
July .	272,017	141,838	119,468	156,755
Aug. .	213,139	134,913	126,806	127,094
Sept. .	295,424	109,176	173,253	109,747
Oct. .	274,418	114,341	138,318	95,833
Nov. .	179,727	90,222	113,544	82,257
Dec. .	223,892	51,053	118,321	.....
Totals	2,594,770	1,350,588	1,341,281	1,207,693

Iron and Steel Imports.

	1912.	1913.	1914.	1915.	1916.
Jan. .	20,008	21,740	17,776	10,568	15,824
Feb. .	11,622	25,505	14,757	7,506	20,280
Mar. .	15,466	27,467	27,829	8,025	15,162
April. .	12,481	25,742	30,585	16,565	20,175
May .	15,949	28,728	28,173	28,916	32,113
June .	21,407	36,597	32,076	32,900	26,886
July .	17,882	36,694	25,282	20,858	14,774
Aug. .	20,571	18,740	28,768	27,557	32,257
Sept. .	18,740	19,941	38,420	23,344	25,558
Oct. .	25,559	20,840	22,754	34,319	30,170
Nov. .	24,154	25,809	24,165	36,931	42,544
Dec. .	21,231	26,454	9,493	35,455	.....
Total	235,072	317,260	389,778	282,443	275,743

Immigration Statistics.

Years mentioned refer to fiscal years ended June 30th. Aliens admitted include immigrant and non-immigrant, aliens departed include emigrant and non-emigrant.

Excess Arrivals Over Departures.

	Aliens.	Citizens.	Total.
1913	815,303	*61,098	754,205
1914	769,276	*82,211	687,065
1915	50,070	67,167	117,237
1916	125,941	11,197	137,138

July, 1915 ...	11,082	3,912	14,994
August	*14,324	*804	*15,128
September ..	*1,965	866	*1,099
October	4,877	662	5,539
November ...	3,292	*802	2,490
December ...	*570	*891	*1,461
January, 1916	7,303	*1,212	6,091
February	19,420	*1,826	17,594
March	23,791	4,198	27,989
April	26,143	4,471	30,614
May	24,708	2,021	26,729
June	22,184	65	22,249

July	18,244	3,634	21,878
August	21,413	304	21,717
September ...	29,310	1,443	30,753
October	28,339	*2,012	26,327
November ...	24,241	*183	24,058
December ...	18,791	*252	18,539
Six months ...	140,338	2,934	143,272

December, 1916.

Immigrant aliens in	30,902
Non-immigrants in	5,062
Total aliens in	35,964

Emigrant aliens out	7,005
Non-emigrant aliens out	10,168
Total aliens out	17,173

Citizens in	11,816
Citizens out	12,068
Excess citizens out	252

Change in population:

Aliens	-18,791
Citizens	252
Net change	-18,539

Our Foreign Trade.

Value of merchandise imports and exports, and favorable trade balance, calendar years.

	Imports.	Exports.	Balance.
1905	1,179,144,550	1,626,990,795	447,846,245
1906	1,320,501,572	1,798,243,434	477,741,862
1907	1,423,169,820	1,923,426,205	500,256,385
1908	1,116,374,087	1,752,835,447	636,461,360
1909	1,475,520,724	1,728,198,645	252,677,921
1910	1,562,904,151	1,866,258,904	303,354,753
1911	1,532,359,160	2,092,526,746	560,167,586
1912	1,818,133,355	2,399,217,993	581,084,638
1913	1,792,596,480	2,484,018,292	691,421,812
1914	1,789,276,001	2,113,624,050	324,348,049
1915	1,778,596,695	3,547,480,372	1,768,883,677
1916	*2,391,716,335	*5,480,900,031	*3,089,184,596

1914—

Jan.	154,742,923	204,066,603	49,323,680
Feb.	148,044,776	173,920,145	25,875,369
Mar.	182,555,304	187,499,234	4,943,930
Apr.	173,762,114	162,552,570	†11,209,544
May	164,281,515	161,732,619	†2,548,896
June	157,529,450	157,072,044	†457,406
July	150,677,291	154,138,947	†5,538,344
Aug.	129,767,890	110,367,494	†19,400,396
Sept.	139,710,611	156,052,333	16,341,722
Oct.	137,978,778	195,283,852	57,305,074
Nov.	126,467,062	205,878,333	79,411,271
Dec.	114,656,545	245,632,558	130,976,013

1915—

Jan.	122,148,317	267,879,313	145,730,996
Feb.	125,123,391	298,727,757	173,604,366
Mar.	158,022,016	296,501,852	138,479,836
Apr.	160,576,106	294,745,913	134,169,807
May	142,284,851	273,769,093	131,484,242
June	157,695,140	268,547,416	110,852,276
July	143,099,620	267,978,990	124,879,370
Aug.	141,830,202	261,025,230	119,195,028
Sept.	151,236,026	300,676,822	149,440,796
Oct.	149,172,729	336,452,009	186,979,289
Nov.	155,496,675	321,670,353	172,173,678
Dec.	171,832,505	359,306,492	187,473,987

1916—

Jan.	184,362,117	330,784,847	146,422,730
Feb.	193,935,117	402,991,118	209,056,001
Mar.	213,589,785	409,850,425	196,260,640
Apr.	217,705,397	399,861,157	182,155,760
May	229,168,957	474,881,255	245,692,298
June	*245,795,438	464,784,318	218,988,880
July	182,722,938	445,472,000	262,749,062
Aug.	199,247,391	509,778,680	310,531,289
Sept.	164,038,614	515,007,408	*350,968,794
Oct.	178,658,730	492,813,918	314,155,188
Nov.	176,988,305	516,976,359	339,988,054
Dec.	204,396,188	521,128,146	316,732,058

* Excess of departures.

* High record † Balance unfavorable.

Copper in January.

**War Developments and Uncertainties the Principal Influencing Factors
Throughout the Month—Net Advance Here 2c to 4c Per Pound,
All Deliveries—Prices Abroad Down £4 to £5 Per Ton,
Due to British Government Control.**

Throughout January the copper trade was swayed by current events tending to encourage either peace or to prolong the war in Europe. In the last week the prospect that the United States would be involved as a belligerent in the world-wide struggle became a most serious consideration and with the severance of diplomatic relations between Germany and the United States, on February 3rd, the first step was taken toward active American participation in the war. As prices of copper suffered a decline, late in December and early in January, when peace in Europe seemed possible, so they recovered later, when the Entente Allies made it clear that the Teutonic overtures were regarded with suspicion and hence no suspension of hostilities were possible at this time. The month closed before the crisis culminated and consequently the full drift of the market was not reflected in the prices current for any position.

Market Declines on Publication of Huge 1916 Production Figures, Recovering Later.

One potent factor, that operated in the industry to cause the recession in prices early in the month was the enormous 1916 production of blister and refined copper revealed by the Government statistics but the tide turned later, and the result of the month's fluctuation was a net advance of 4c per pound on prompt and Feb. shipment, from 28.50 to 29.50c to 32.50 to 33.50c per lb.; a rise of 2c per pound for first quarter delivery, from 28 to 28.50c to 32 to 32.50c; an advance of 3 to 3½c on second quarter shipment, from 27 to 27.50c to 30 to 31c per pound and 2 to 2½c on later positions—third quarter from 26 to 28.50c and fourth quarter from 25 to 27c—but prices for far off positions were not established by important sales. Large producers being sold for the first six months of 1917, con-

tinued to hold prices nominal at ½ to 1c per pound over the prices current in the open market.

During the first ten days of January, prices had receded ½ to 1c per pound on the various positions from the prices current when the year opened making a drop of 8 to 8½c per pound on nearby positions and 7 to 7½c per pound on third and fourth quarter shipments from December 11th, but, by the middle of the month, there was a partial recovery with holders more confident of the future. Consumers, who early in the month were importunate sellers of nearby deliveries retired from the market. Dealers, too, assumed a more cautious attitude.

Report of New Large Allied Contract Officially Denied.

Holders, generally, were encouraged to expect a further sharp advance in prices by the announcement that the Entente Allied Governments were seeking to place another large contract for shipment over the last half of this year. The report was received first with skepticism and ridicule; later with credence, but only to be dismissed with disappointment upon official denials of negotiations.

In the third week, the industry was more concerned with productive problems than with a selling campaign. Output from the mines in the West was curtailed by cold weather and in the Northwest by an inadequate supply of fuel. Shipments of blister copper from western smelters to eastern refineries were long delayed because of intermittent railroad embargoes and a lack of ample rolling stock. Pig and blister copper was sent to the refineries by circuitous routes to avoid the serious freight blockade in the Central West. Because of intermittent arrivals of copper at eastern plants for treatment and also because of labor difficulty at Perth Amboy, the production of Electrolytic

Lake Copper Prices.

Monthly average prices of **Lake Copper** in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.89	14.76	13.89	24.10	29.83
Feb.	15.37½	14.98	14.72½	27.44	
Mar.	14.96	14.72	15.11	27.42	
Apr.	15.55	14.68	17.43	28.91½	
May	15.73	14.14	18.81	29.28½	
June	15.08	14.15	19.92	27.44	
July	14.77	13.73	19.42	25.81	
Aug.	15.79	12.68	17.47	26.58	
Sept.	16.72	12.43½	17.76	27.86	
Oct.	16.81	11.66	17.92½	28.37½	
Nov.	15.90	11.93	18.86	31.71	
Dec.	14.82	13.16	20.37½	33.07½	
Av.	15.70	13.61	17.64	28.17	

Electrolytic Copper Prices.

Monthly average prices of **Electrolytic Copper** in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.75½	14.45	13.71	24.10	30.26
Feb.	15.27	14.67	14.57	27.46	
Mar.	14.92½	14.33½	14.96	27.44	
Apr.	15.48	14.34	17.09	29.31	
May	15.63	14.13	18.60	29.81	
June	14.85	13.81	19.71	27.49½	
July	14.57	13.49	19.08	25.60	
Aug.	15.68	12.41½	17.22	27.36½	
Sept.	16.55	12.08½	17.70½	28.26	
Oct.	16.54	11.40	17.86	28.64	
Nov.	15.47	11.74	18.83	32.22½	
Dec.	14.47	12.93	20.35	33.84	
Av.	15.52	13.31½	17.47	28.46	

Casting Copper Prices.

Monthly average prices of **Casting Copper** in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.57	14.27½	13.52	23.06½	28.04½
Feb.	15.14	14.48	14.17	26.03	
Mar.	14.76	14.18	14.34	25.90	
Apr.	15.33	14.18	16.48	27.16	
May	15.45½	14.00	17.41	27.37	
June	14.72	13.65	18.74½	25.10	
July	14.40½	13.34½	17.16½	23.61	
Aug.	15.50	12.27	16.46	24.67	
Sept.	16.37½	12.00	16.75	25.96	
Oct.	16.33	11.29	17.32	27.17	
Nov.	15.19	11.63	18.41	30.37	
Dec.	14.22	12.83½	19.73	31.74	
Av.	15.33	13.18	16.76	26.51	

Sheet Copper Price Changes.

The changes in the base price of sheet copper since Jan. 22, 1916 are given below with price of Lake copper on the same date.

1916—	Sheet Copper.	Lake Copper.
January 31	32.00	25.25
February 5	33.00	26.00
February 11	34.00	27.50
February 23	35.00	28.25
March 1	34.00	28.12½
March 25	34.50	27.37½
April 13	35.50	29.25
April 20	36.50	29.75
May 5	37.50	29.75
August 2	35.50	25.50
August 18	37.50	27.00
November 10	38.50	29.75
November 14	40.00	31.75
November 20	41.00	33.75
November 29	42.00	33.75

Waterbury Copper Averages.

	1913.	1914.	1915.	1916.	1917.
Jan.	17.00	14.75	14.12½	24.75	32.25
Feb.	15.50	15.12½	15.25	27.75	
Mar.	15.12½	15.00	15.75	28.00	
Apr.	15.75	14.87½	18.50	29.00	
May	15.87½	14.75	22.50	29.87½	
June	15.37½	14.37½	22.50	28.25	
July	14.75	14.12½	22.25	27.25	
Aug.	15.62½	15.00	19.50	27.00	
Sept.	16.87½	12.87½	18.50	28.00	
Oct.	16.87½	12.25	18.25	28.87½	
Nov.	16.25	12.25	19.37½	33.25	
Dec.	15.00	13.50	20.75	34.25	
Av.	15.83	13.91	18.94	28.85½	

Exports of Copper From the United States.

(In tons of 2,240 lbs.)

	1914.	1915.	1916.	1917.
January ..	36,018	26,193	23,663	25,543
February ..	34,634	15,583	20,648	
March ...	46,504	30,148	26,321	
April	35,079	18,738	21,654	
May	32,077	28,889	16,062	
June	35,182	16,976	39,595	
July	34,145	17,708	35,066	
August ...	16,509	17,551	32,190	
September	19,402	14,877	29,803	
October ..	23,514	21,087	34,224	
November	21,999	21,168	22,598	
December ..	22,166	42,126	26,486	
Totals	360,779	276,444	327,310	

copper in January was cut down about 25,000,000 pounds as compared with December. The January production is estimated at 185,000,000 pounds as compared with 210,000,000 pounds in December. Deliveries to domestic consumers were also reduced because of poor railroad service but the indication is that about 125,000,000 pounds were distributed on home account while exports were a little over 57,000,000 pounds indicating but slight accumulation at the refineries.

Although the demand for the refined metal was confined to relatively small lots for nearby shipment the small supply available developed a stronger tone and higher prices were asked. Toward the close of the month some small lots of prompt and January shipment were reported to have sold at 33c per pound or slightly higher. February delivery was difficult to buy at 32.50c; March at 32c and April at 31c per pound. Some small lots for shipment during the second quarter were reported to have been sold to domestic consumers at 30 to 31c per pound. Third quarter delivery was reported nominally quotable at 28 to 29c, and fourth quarter at 27 to 27.50c per pound.

British Government Inaugurates Policy of Rigid Control of Stocks.

The British Government adopted a most rigid policy to secure ample tonnage of copper for munitions works; to that end, ordinary mercantile business was practically suspended and supplies of copper in the hands of the English trade were commandeered including scrap as well as unwrought copper.

As an indication of the stringency in supplies available for private manufacturing purposes, abroad, it is noted that the Birmingham Jewelers' & Silversmiths' Association was officially ordered to keep the manufacture of electroplated goods at a minimum that munition manufacturers might not be embarrassed by an inadequate supply of unwrought copper. The English Government in exercising complete con-

trol over the industry has suspended the publication of statistics and has arbitrarily changed prices of copper given to the public entirely out of harmony with prices prevailing in this country. The net result of these changes during the month, was a decline of £5 on American Electrolytic, spot and futures. £4 10s on spot Standard and £4 on future Standard. American Electrolytic, as well as Standard had been quoted £4 lower during the month—January 11. The last official government cables to this country in January were £145 for spot and £142 for future Electrolytic, £134 for Standard, and £130 for future Standard. On many days London cables were withheld entirely.

Copper Prices in January.

Day.	— New York —			London.	
	Lake.	Electro.	Casting.	Standard.	
	Cents.	Cents.	Cents.	£	s d
1 ....	.....	.....	.....	134	0 0
2	29.75	29.00	28.00	133	10 0
3	29.25	28.50	27.50	133	10 0
4	29.00	28.25	27.25	133	10 0
5	28.75	27.87½	27.25	133	0 0
8	28.50	28.00	27.25	133	0 0
9	28.50	28.00	27.25	133	0 0
10	28.25	28.00	26.75	131	0 0
11	28.25	28.25	26.75	130	0 0
12	28.25	29.00	26.75	130	0 0
15	28.25	29.25	27.50	130	0 0
16	29.00	29.50	27.75	130	0 0
17	29.00	29.75	28.00	130	0 0
18	29.50	30.50	28.25	130	0 0
19	30.00	31.00	28.50	130	0 0
22	30.25	32.00	28.50	130	0 0
23	31.25	32.50	28.75	130	0 0
24	31.25	32.25	28.75	130	0 0
25	31.25	32.25	28.75	132	0 0
26	32.00	32.75	29.25	132	0 0
29	32.00	33.00	29.25	132	0 0
30	32.00	33.00	29.50	132	0 0
31	32.00	33.00	29.50	134	0 0
High	32.25	33.50	29.75	134	0 0
Low	28.00	27.15	26.50	130	0 0
Av'ge.	29.83	30.256	28.045	131	11 9

Tin in January.

January Dull as to New Business But Eventful and Interesting Otherwise—Record-Breaking American Deliveries—Price Cables Interrupted by Censor—U-boats Still a Source of Anxiety—Net Advance Here 27⁷/₈¢ Per Pound—London Up From £13 5s to £14 12s 6d, All Grades and Deliveries.

January, in the tin trade, notwithstanding the dullness in new business throughout the month, was eventful and interesting. Foreign cables were intermittent—being entirely withheld at one time, for several days. Danger to tin afloat, was constant and a source of much anxiety. American deliveries on contracts broke all previous records—7,177 tons—and arrivals of 4,320 tons were very satisfactory. Australian tin came into some prominence because of its high quality and adaptability for special uses. Foreign quotations for the month show net advances on all positions and on all kinds of tin—£14 12s 6d on spot Straits; £14 5s on spot Standard; £13 5s on future Standard, and £14 10s on Straits Singapore, c.i.f. London. Spot Straits tin at New York advanced 27⁷/₈¢ net to 45.75¢ per pound.

Following the reaction of prices in December, the sharp advance in the London market at the beginning of January—£3 15s on spot Standard; £3 10s on future Standard; £3 10s on spot Straits and £6 10s on Straits at Singapore—produced a disquieting effect, the reason for the advance not being apparent. The result was a price difference of 1¹/₂¢ per pound, on the same kinds of tin, asked by different dealers here. On the 3rd, monthly statistics revealed a decrease in the visible supply, showing 500 tons less than had been expected. The first week closed with good business being transacted by dealers and consumers at 41.87¹/₂¢, ex steamers arriving the following week. At Singapore, the market declined to £183 c.i.f. London, while London registered an advance of 5s on spot Straits with Standard unchanged.

Nearly all of the 850 tons Straits tin that arrived at the beginning of the second week, was immediately distributed on old contracts; some small

sales were made at 42.75¢, for spot Straits, while tin ex steamer at dock, was held at 42.50¢ to 42.62¹/₂¢ per pound. Following this, Singapore advanced to £186 c.i.f. London, while London reported a decline to £181 5s for spot Standard; £183 for future Standard and £181 10s for spot Straits. There was a fair inquiry for February-March delivery and much dissatisfaction was expressed with permit regulations; claims of unfairness being made, that, in a free-buying movement would have caused an acute situation to develop, probably. Banca tin was in good supply, tending to substantiate the contradiction of the report that Germany had secured the Dutch Government production. By the tenth, pessimism was evident due to the uncertainty of future business, because of the increased war risk charges and the great difficulty in obtaining permits. Spot tin, here on January 12th advanced 3¹/₈¢ to 43¢ on the recovery at London of the previous day's recession in prices. By the 15th, nervousness was pronounced, cables not having been received for some days, when some prominent consumers gave unexpected orders for 150 tons Straits tin, for immediate delivery. Sellers became cautious and some refused to make quotations while others advanced prices 3¹/₈¢ to 3¹/₂¢ per pound and made sales. The advance here, was cabled to London, and immediately, prices there, rose sharply—spot Standard, £3 5s to £186; future Standard, £2 15s to £187 5s; spot Straits, £3 5s to £186 5s; while spot Straits Singapore rose £5 to £190 c.i.f. London. Stocks here were plentiful but closely held for safety. Another three days absence of quotations, during which time the continued sinking of vessels carrying all kinds of commodities, by German raiders, contributed further to disturb busi-

ness, although carload lots, for prompt delivery and for January, were in fair demand. On the 19th, a private cable giving quotations, spot Standard, £187 10s; future Standard £188 15s; spot Straits £188 and Straits, Singapore, £192 10s, was in the nature of a surprise to the trade here, a sharper advance having been expected. Anxiety concerning tin afloat, increased.

Official Price Cables Resumed on Protests of Interests Here.

On the 22nd, the beginning of the third week, public official cables from London confirmed the prices of the private wire that had been received. Wholesale lots of spot here, were held at 45.50c and small retail lots were obtainable at the same price. Straits tin afloat from London was held at 44.75c per pound and May-June position was quoted at 43.75c. Spot Banca was growing scarce and other positions were irregular. As a result of protests made by strong interests, here, foreign cables became regular and on the 23rd, showed an advance, followed on the 24th by an equal recession. The steamer Rotti with 1,000 tons Banca arrived with very little tin unsold, but some sales were made at 43.62¹/₂c to 43.75c per pound, although the asking price was 44c. Next day the s.s. "Manhattan" with 550 tons Straits, was docked, and an easier tone developed. A decline of £1 10s was reported from the East Indies.

Scarcity in 99% Tin—U-Boat Activities Cause Much Anxiety — Record-Breaking Deliveries.

During the fourth week, there was a scarcity of 99% spot tin, due to the 12 days' strike at the Smelting & Refining Company's works at Perth Amboy, N. J., and Australian tin came into notice as possessing a quality preferred by solder makers and as being especially adapted to the uses of tin plate manufacturers, as well as in all cases where Banca is found unsatisfactory. Foreign limits on the 26th, were up £1 5s on spot Standard, and £1 2s 6d on Straits. During the last three days of the month, the danger to tin afloat from war operations became the occasion of great concern, but with large supplies on hand, and record-breaking deliveries during the month—7,177

tons — on contracts, a strong tone prevailed. Under active buying, Banca advanced to 44.25 to 44.50c per pound and 43.50c was bid ex s.s. Waaldijk due this month while dealers bid 45.75c for spot Straits and London limits on tin due to leave London were taken at the equivalent of 44.75c c.i.f. New York.

The unprecedentedly large deliveries during January make it clear why consumers have shown small buying interest since the first of the year and why the actions of the sea raiders have not caused greater excitement. Far off futures did not attract much attention and prices were somewhat nebulous at the close of the month, but apparently there was an advance of about 2¹/₄c per pound in January. Notwithstanding the large shipments to consumers from Atlantic and Pacific ports, stocks at New York and outports decreased only 889 tons to 2,622 tons at the end of January.

The foreign markets closed strong, Singapore being quoted at £196 c.i.f. London. Spot Straits at London was firm at £193 10s, spot Standard at £193 and future Standard £194.

Tin Prices in January.

	New York.	London.
1 .....	.....	£180 15s 0d
2	43.00	182 5 0
3	42.75	181 15 0
4	42.50	180 15 0
5	42.50	180 15 0
6	42.75	181 15 0
7	42.60	181 5 0
8	42.62 ¹ / ₂	181 15 0
9	42.75	182 15 0
10	43.00	184 5 0
11	44.10	185 0 0
12	44.50	187 5 0
13	45.00	187 10 0
14	45.25	188 10 0
15	45.50	189 5 0
16	45.50	190 10 0
17	45.50	191 0 0
18	45.12 ¹ / ₂	189 5 0
19	45.00	188 15 0
20	45.12 ¹ / ₂	190 0 0
21	45.50	191 10 0
22	45.75	192 15 0
23	45.85	193 0 0
24	45.85	193 0 0
High	45.85	193 0 0
Low	42.50	180 15 0
Average	44.19	186 4 7

Visible Supplies.

Visible supply of tin at end of each month:

	1913.	1914.	1915.	1916.	1917.
Jan.	13,971	16,244	13,901	17,041	18,169
Feb.	12,304	17,308	14,548	16,511	
Mar.	11,132	16,989	15,467	18,782	
April	9,822	15,447	15,785	19,739	
May	13,710	17,862	14,646	19,614	
June	11,101	16,027	15,927	19,363	
July	12,063	14,167	16,084	18,404	
Aug.	11,261	14,452	15,127	18,042	
Sept.	12,943	14,613	15,191	16,192	
Oct.	11,857	10,894	13,154	17,415	
Nov.	14,470	11,483	16,451	21,186	
Dec.	13,893	13,396	16,216	20,737	
Average	12,577	14,907	15,208	18,585	

Shipments From the Straits.

Monthly shipments of tin from the Straits Settlements to Europe and United States:

	1913.	1914.	1915.	1916.	1917.
Jan.	6,050	5,290	5,200	6,095	4,815
Feb.	4,660	6,520	5,584	6,250	
Mar.	4,810	4,120	4,970	5,170	
April	4,400	4,930	5,270	4,685	
May	6,160	6,900	6,759	3,965	
June	4,280	5,870	6,665	6,210	
July	4,770	4,975	5,606	5,410	
Aug.	6,030	3,315	4,712	4,526	
Sept.	5,160	4,973	5,296	3,270	
Oct.	5,020	4,610	4,441	5,868	
Nov.	5,560	5,155	6,713	5,380	
Dec.	5,110	6,435	5,301	4,758	
Total	62,550	63,093	66,517	61,587	
Average	5,213	5,258	5,543	5,132	

Consumption In the U. S.

Monthly deliveries of tin in the United States exclusive of Pacific Coast:

	1913.	1914.	1915.*	1916.*	1917.*
Jan.	3,700	3,600	2,300	4,452	7,177
Feb.	3,500	3,300	3,375	6,388	
Mar.	5,900	4,450	3,200	4,726	
April	3,450	4,300	3,200	4,202	
May	3,350	3,800	5,600	5,455	
June	3,800	3,650	3,900	6,398	
July	3,900	3,900	5,300	4,432	
Aug.	3,600	2,900	4,500	4,335	
Sept.	3,100	3,600	4,300	4,025	
Oct.	3,700	3,700	4,900	4,556	
Nov.	2,800	2,600	2,975	3,165	
Dec.	3,100	1,900	5,200	4,082	
Total	43,900	41,700	48,750	56,216	
Average	3,658	3,475	4,062	4,685	

* Includes deliveries at Pacific coast.

Monthly Tin Statistics.

Compiled by New York Metal Exchange
(Tons of 2,240 lbs.)

	Jan.	Dec.	Jan.
Straits shipments 1917.	1916.	1915.	
To Gt. Britain..	1,905	2,870	1,540
" Continent ..	745	623	350
" U. S.	2,165	1,265	4,205
Total from Straits	4,815	4,758	6,095
Total from Australia	239	200	324
Consumption			
London deliveries	1,215	1,200	1,377
Holland deliveries	105	63	57
U. S.	7,177	4,082	4,452
Total	8,497	5,345	5,886

Stocks at close of month:

In London—			
Straits, Australian	2,494	2,740	1,165
Other kinds ..	1,252	1,550	1,940
In Holland			
In U. S.	2,622	3,511	2,401
Total	6,368	7,841	5,506

Afloat close of month:

Straits to London	4,450	4,507	2,129
" to U. S. ...	4,923	5,318	8,315
Banca to Europe .	2,428	3,111	1,091
Total	11,801	12,936	11,535

	Jan. 31.	Dec. 31.	an. 31.
Total visible supply	18,169	20,737	17,041

Straits Tin Prices In New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	50.45	37.74	34.30	41.88	44.19
Feb.	48.73	39.93	37.32	42.63	
Mar.	46.88	38.08	49.93 ¹	50.42	
Apr.	49.12	36.10	47.98	51.75	
May	49.14	33.30	38.78	49.15	
June	44.93	30.65	40.37	42.18	
July	40.39	31.75	37.50	38.46	
Aug.	41.72	50.59 ¹	46.39	38.54	
Sept.	42.47	32.79	33.13	38.70 ¹	
Oct.	40.50	30.30 ¹	33.08	41.16	
Nov.	39.81	33.50	39.37 ¹	44.17	
Dec.	41.64	33.60	38.75	42.60 ¹	
Year	44.32	45.70	38.66	43.48	

Spelter in January.

Market Dull Throughout Greater Portion of Month—Net Advance Here $\frac{5}{8}$ c per Pound; London Down £4 on All Positions.

January trading in spelter was of an intermittent character, sporadic periods of activity when prices advanced, being separated by longer periods of dullness when prices declined; but the net result of the month's fluctuations was an advance of about $\frac{5}{8}$ c per pound on all positions in the New York and St. Louis markets. On the contrary, London was weaker, prices on spot and futures declining £4 net on all positions. In the home market, nearby positions sold as low as 9c and as high as 10.87 $\frac{1}{2}$ c per pound during the month.

During the first week, trade was quiet, the dullness being an extension of the dullness of the inactive period at the close of December. The publication of the 1916 statistics had small effect upon the market, as the Government report substantiated trade estimates. The former showed an increase of 34% in the 1916 production, a gain of 59% in exports and an increase of 22% in domestic consumption. In each case, new high records were established. It is now evident that productive capacity has overtaken demand.

The opinion was expressed in the trade early in the month that the course of the market in the next few months will depend largely upon the action of the brass manufacturers. They are understood to be well supplied with stock and to have placed contracts to cover their requirements for possibly 60 days and without their buying support no great advance in prices could be expected. Other consumers, however, were taking satisfactory lots from producers for January-February shipment but small interest was shown in futures, with selling interests willing to make concessions of $\frac{1}{8}$ c for April and later deliveries. At the close of the first week, sales of prompt and January shipment were made at 9.62 $\frac{1}{2}$ c; February and first quarter at 9.50c and second quarter at 8.87 $\frac{1}{2}$ c per pound.

Some New York trading interests, taking advantage of the dullness pre-

vailing, made a drive at the market at the beginning of the second week and in the next few days succeeded in bringing about a decline of $\frac{1}{4}$ to $\frac{1}{2}$ c per pound. By January 10th, sales of about 360 tons were made on the New York Metal Exchange at 9c East St. Louis for January; 8.75c for February and at 8.50c for March. Larger sales in the open market were made at the same level of prices. Dealers bought with greater freedom than for a long time and consumers entered the market for January-February-March shipments a few small orders for export were placed but the difficulty of securing freight room on steamships for England, held back some promising business. In the next two days, the market was again quiet but there was less pressure from the large local trading interests who instituted the decline. The wide divergence of views entertained by producers, apparently were based upon the amount of business booked for various deliveries; some were accepting orders for nearby shipments but reluctant to take future orders while others were more inclined to sell futures than nearby deliveries.

Decline Checked by Allies' Reply to German Peace Overtures.

Upon the publicity of the Entente-Allied Governments' reply to Germany's overtures for peace, the tendency toward a decline in prices was checked. Dealers were the first to act, coming into the market in force and bidding $\frac{1}{4}$ c advance. Consumers also exhibited more interest while producers became more reluctant to sell. Late on January 13th, however, a large number of consumers' orders were accepted but on the following day, bids of $\frac{1}{8}$ c to $\frac{1}{4}$ c higher were rejected. Producers refusing to sell, buyers became excited, bidding up the market $\frac{3}{8}$ to $\frac{1}{2}$ c per pound without obtaining much metal. On January 15th, London cables announcing a break of £3 15s on spot

and £2 5s in futures, had a cooling effect upon the ardor of buyers. The London break was attributed to an effort to depress the market upon which to buy but private cables declare the decline was induced by the report that German interests were actively selling the market down here in expectation of an early peace. On the same day, a decline of \$5.00 per ton in the price of zinc ore strengthened the belief in lower prices. Consumers took advantage of the situation and placed orders at 9.75c for prompt and January shipment; at 9.62½c for February and at 9.37½c for Mar. but dealers were obliged to pay 1sc to 1½c more, producers preferring consumers' to dealers' contracts. Business was restricted to the first quarter as bids for the second quarter were below the views of producing interests.

Reports that negotiations had been opened for the purchase of spelter by the Entente-Allied Governments were received with special interest. Producers hoped for increased profits but the selling of a large tonnage for shipment over six months, naturally would bring out increased competition and a repetition of the confidential price made on the last large foreign purchase, was expected.

Market Easier—Later Turns Firm and Higher.

An increase in offerings in conjunction with a decrease in demand from consumers, developed an easier tone on January 17th, resulting in concession of 1sc on February and later positions. For January shipment, it was a significant fact, that consumers in the West had paid 1sc per pound more than was obtained in the East. The market was less active during the next two days but a sustaining force came from a strong and higher market for zinc ore in the Joplin district, expressed in an advance of 1sc per pound on February-March shipments. Several days of dullness ensued, but on January 25th, the market became suddenly active and large buying by dealers, supplemented by increased orders from consumers, caused an advance of 1½c on first quarter and 3sc on second quarter shipments. Sales were made at 10 to 10.12½c for prompt shipment;

9.87½c to 10c for February and at 9.37½c for April-May and June. A significant fact was that a good business was done in brass special at 7sc to 11sc over the prices current over prime western. On the following day, another advance of 3sc per pound was established because of light offerings although the demand was less active. An advance in ore prices at Joplin to \$90 per ton caused a further advance of 1½c per pound, sales of prompt shipment being made at 10.75c; February at 10.62½c; March at 10.37½c and second quarter at 10c f.o.b. St. Louis. In fact, prompt shipment sold as high as 10.87½c but with larger offerings and a withdrawal of dealers from the market, a reaction followed, causing a decline of 1½ to 3sc per pound during the last two days of the month.

According to reliable reports the British Government has arranged to supply its home requirement for high grade spelter without making any purchases in the American market.

Spelter Prices in January.

Day.	New York.	St. Louis.	London.		
	Cents.	Cents.	£	s	d
1 .....	.....	.....	50	5	0
2	9.92½	9.75	50	5	0
3	9.80	9.62½	50	10	0
4	9.80	9.62½	50	10	0
5	9.80	9.62½	50	10	0
8	9.58¾	9.43¾	50	5	0
9	9.55	9.37½	50	5	0
10	9.30	9.12½	49	10	0
11	9.23¾	9.06¾	49	5	0
12	9.42½	9.00¾	45	10	0
15	9.92½	9.00¾	45	10	0
16	9.96¾	9.87½	47	0	0
17	9.96¾	9.87½	47	0	0
18	9.96¾	9.87½	47	0	0
19	9.96¾	9.87½	47	0	0
22	9.96¾	9.87½	47	0	0
23	9.96¾	9.87½	47	0	0
24	10.02½	9.87½	47	0	0
25	10.30	10.12½	47	0	0
26	10.67½	10.50	47	0	0
29	10.92½	10.75	47	0	0
30	10.80	10.62½	47	0	0
31	10.55	10.47½	47	0	0
High	11.05	10.87½	50	10	0
Low	9.17½	9.00	45	10	0
Average ..	9.97	9.82	48	1	11

Lead in January.

Month Opens Quiet, but Later Turns Very Active and Strong—Market Continues Strong at the Close With Net Advance of 1c to 1½c on Spot; ¾c to 1c on February Delivery.

After having established in 1916, the highest price record of any year—50% more than the average 1915 price and a record-breaking production of 579,600 tons—the lead market, at the beginning of 1917, opened quietly, with future positions more freely offered and with February-March shipments ¼c per pound below the Trust price of 7.50c New York and 7.42½c St. Louis. The scarcity of coal, with not a few plants closed for over the holidays, restricted production while the shortage of cars produced a like effect upon shipments during the first week. Sellers seemed satisfied, however, and were not expecting a revival of business until later in the month. On the fifth, sales in carload lots for prompt shipment from the West, were made at 7.50c New York and at 7.37½c St. Louis for January-February-March positions.

During the first three days of the second week, there were very few offerings of outside lead but prices were slightly shaded from the Trust basis by independents and second hands for prompt and January shipments. On the 13th, St. Louis reported signs of life in the market and on the next day improvement here was noted with holders of prompt and January positions asking \$2.00 per ton more, while for future shipments \$1.00 per ton higher was asked. The London market was reported to be pegged at £30 10s for prompt and at £29 10s for future positions but as these quotations are the highest allowed by the British Government restrictions to be quoted on the London Metal Exchange they are really not likely to be the prices actually paid.

Market Very Strong—Premiums Over Trust Price Asked—Supplies Scarce.

During the third week the scarcity of lead for early shipment increased with 7.60c bid for spot and paid for

prompt shipment from the West. Large producers reported they were sold up for January and early February and on the 18th, in the outside market, premiums of \$5.00 per ton over the Trust price were asked for prompt and January shipments and premiums of \$2.00 to \$4.00 per ton were asked for February position. The great strength of the market, despite the absence of ammunition orders, was considered to be evidence of a healthful domestic condition. On the 19th, 7.65c was asked at East St. Louis and 7.75c at New York with supplies apparently growing less and less.

At the opening of the fourth week, the scarcity of lead was a pronounced feature. Buyers, while in need of lead, were cautiously endeavoring not to excite the market but would pay higher prices. Few if any of the producing interests had any lead to offer for prompt shipment and such orders as were placed went to second hands at premiums of ¼ to 1½c per pound over the Trust price but the greater part of the current shipments went forward on a sliding scale basis. Consumers had and still have large tonnages of lead in transit, said to be more than at any time in trade history, but because of the freight congestion they were forced into the market to cover pressing requirements. The market was feverish and nervous and any active demand would have carried prices to unheard-of levels.

St. Louis Market Excited.

On January 25th, February lead in the open market advanced to 8c New York and to 7.75c East St. Louis. The demand for later deliveries increased, consumers seeking to place contracts on a sliding scale basis. It was a significant fact that producers were never so well sold ahead, notwithstanding the fact that the output was never so great. The few trading interests with lead for sale, advanced prices after each

transaction. The St. Louis Market was excited and higher, the demand becoming hourly more urgent with offerings extremely light. By January 27th, buyers, who had refrained from bidding up the market, threw off all restraint in an effort to secure supplies regardless of competitors. Selling prices were advanced following each successive higher bid. Consumers sought to place all sorts of orders from carloads to 1,000-ton lots with poor success.

On January 29th, the American Smelting & Refining Company advanced its official price from 7.50c to 8c per pound New York for shipments from the West in 50-ton lots. In the open market, the stringency of supplies, resulting from freight congestion and the sold-up condition of producers, caused an advance to 8.25 to 8.37½c per pound New York for prompt and for January shipment. With lack of supplies, however, wholesale trading was not possible, while sales in less than carload lots were made at all sorts and all kinds of prices. During the last two days of the month, sales of February shipment from the West were made at 8.10c f.o.b. St. Louis and of March shipment at 8c delivered New York. Prompt shipments were entirely nominal at 8.50c to 9c per pound.

Some producers declined to name flat prices for any deliveries after March because when the freight embargoes are raised and lead is in more ample supply, prices will decline far below the level at which consumers, under the stress of the present moment, would pay, which would lead later to friction if not to default of contracts.

When the month closed prompt and February shipments were being quoted at \$5.00 to \$15.00 per ton premium over the Trust price, but March and April shipments from the West were offered at 8c per pound delivered New York. Because of the unusual conditions it is difficult to make comparisons of the spot price at the beginning and end of the month, which would be of practical value. Upon the surface, quotations were advanced from 1 to 1½c per pound on spot and 7½ to 1c per pound on the February position.

The London market remained pegged at £30 10s on spot and at £29 10s on futures.

Lead Prices in January.

Day.	New York*	St. Louis.	London.
	Cents.	Cents.	£ s d
1	7.50	7.35	30 10 0
2	7.50	7.35	30 10 0
3	7.50	7.35	30 10 0
4	7.50	7.35	30 10 0
5	7.50	7.35	30 10 0
8	7.50	7.35	30 10 0
9	7.50	7.35	30 10 0
10	7.50	7.35	30 10 0
11	7.50	7.35	30 10 0
12	7.50	7.35	30 10 0
15	7.60	7.45	30 10 0
16	7.60	7.45	30 10 0
17	7.65	7.45	30 10 0
18	7.75	7.55	30 10 0
19	7.75	7.60	30 10 0
22	7.75	7.60	30 10 0
23	7.87½	7.65	30 10 0
24	7.87½	7.65	30 10 0
25	8.00	7.75	30 10 0
26	8.12½	7.90	30 10 0
29	8.31½	8.06½	30 10 0
30	8.75	8.18½	30 10 0
31	8.75	8.18½	30 10 0
High ...	9.00	8.25	30 10 0
Low	7.50	7.30	30 10 0
Average.	7.81	7.58	30 10 0

* Outside market.

Sheet Zinc Price Changes.

The following table gives the changes in the base price of sheet zinc for the past year, together with the price of spelter ruling on the same day.

1916—	Spelter Sheet Zinc. St. Louis.	
January 26	24.00	19.00
February 17	25.00	20.87½
April 22	25.50	18.75
May 15	24.50	15.50
May 23	23.50	14.87½
May 29	23.50	14.12½
June 2	21.00	13.12½
June 13	20.00	13.37½
June 20	19.00	12.00
June 27	18.00	11.37½
July 6	17.00	9.37½
July 11	15.00	8.62½
October 26	16.00	10.12½
November 10	17.00	11.12½
November 17	18.00	12.00
November 20	19.00	12.12½
November 24	20.00	12.87½
November 24	21.00	12.87½

Antimony in January.

First Half of January Quiet but Firm; Last Half Active and Strong—Net Advance in Spot 10c to 10 $\frac{3}{4}$ c per pound—Futures Up 2c to 3c.

Antimony was active, strong and higher during the third and fourth weeks of January after a quiet but firm period covering the first half of the month. There was less activity during the last few days and a further advance after some recession in prices on future deliveries but with the great scarcity of spot metal, prices on closing day of the month maintained the highest level touched, the advance for the month being 10.50c to 10.75c per pound on jobbing lots. Future deliveries advanced 2c to 2 $\frac{1}{2}$ c per pound and shipments from the Orient appreciated 2 $\frac{1}{2}$ c to 3c per pound.

The month opened with a lack of vitality except in jobbing lots which sold at 14.37 $\frac{1}{2}$ c duty paid for prompt shipment and at 13.75c to 14c for January-February delivery. Wholesale lots were nominally quotable at 12.25c in bond with offerings at this price in transit overland from the Pacific Coast. January-February shipments from the Orient were held at 12c in bond with buyers at 1 $\frac{1}{2}$ c per pound less.

Greater interest developed in the second week, with spot sales made at 12.50c in bond and at 11.75c for January shipment from China and Japan. Very little spot antimony was offered in warehouse, but jobbing lots from steamers at dock sold at 14.25c to 14.37 $\frac{1}{2}$ c, duty paid. Some of the larger importers were carrying large stocks which cost much higher prices than the current market and therefore were not being offered but occasional lots against these supplies were sold at 12.25c to 12.50c in bond. On January 10th, there were offers against steamers afloat at 12.37 $\frac{1}{2}$ c in bond. November-December shipments from the Orient sold at 12.75c, January shipment at 11.75c and February at 11.50c in bond. On the following day, sales were made at 12.12 $\frac{1}{2}$ c due to arrive soon from steamers afloat and at 12c for December shipments from the Orient. There were also offerings for February-

March shipment from the Far East without exciting the interest of buyers but before the close of the second week, prospective buyers bid 12.12 $\frac{1}{2}$ c for December and 11.62 $\frac{1}{2}$ c for January shipment for the Orient.

After the middle of the month steadily increasing interest was shown with sales of prompt and January delivery at 14.25c to 14.50c in a jobbing way and these prices were advanced 1 $\frac{1}{2}$ c to 1 $\frac{3}{4}$ c per pound in the next few days.

On January 17th, the news that an antimony-laden steamer had arrived at San Francisco on fire, combined with the difficulty shippers experienced in getting freight room for Oriental shipments, necessitated the purchase of spot and nearby antimony afloat, to fill contracts, resulting in sales as high as 13.25c in bond for spot metal. Higher prices also prevailed for December-January shipments from Japan. The difficulty of securing prompt discharge of vessels from docks aggravated the local situation with jobbing sales made at 15c per pound, duty paid.

During the fourth week, the market was active, strong and higher for all positions, jobbing lots of spot advancing steadily from 15c to 21c per pound, because of a pronounced scarcity on spot and small offerings for delivery for the next three months. Sales of round lots were made at 12.37 $\frac{1}{2}$ c up to 13.37 $\frac{1}{2}$ c in bond for February shipment from the Orient. Similar March shipments ranged from 12.25c to 13.25c in bond. On January 25th, February March shipments from the Orient sold at 13c in bond and on the following day 1 $\frac{1}{2}$ c to 2 $\frac{1}{2}$ c higher was asked.

There was less excitement during the last three days of the month but with light supplies prices were fully maintained. The delay in arrivals from the Pacific Coast aggravated the spot situation. Importers frowned upon an effort made by some trading interests to secure spot supplies and to exploit the

situation and sold to consumers at lower prices than dealers offered. Further sales of March and April shipment from the Orient were made at 13.37½¢ and 13¢ respectively. On the closing day of the month, 25¢ per pound was paid for jobbing lots of spot. Consumers

were not interested in future positions beyond February but dealers were ready buyers at 13.75¢ per pound in bond for February; 13.25 for March and 12.87½¢ for April shipments from the Orient with importers asking 1¢ to 1½¢ per pound higher.

Aluminum in January.

Market Weak and Declining Throughout the Entire Month Turning Firmer at the Close—Net Decline for Month 5¢ per Pound.

At the beginning of 1917, quotations for No. 1 Virgin aluminum were 60¢ to 64¢; for 98-99% pure remelt 55¢ to 58¢ and for No. 12 alloy remelt, 40¢ to 45¢ per pound. As the month advanced prices weakened with sales reported on the 9th, at 61¢ New York for No. 1 Virgin with offerings to dealers at somewhat less. The British Government it was reported, about this time, was furnishing aluminum to munition makers at 43¢ per pound. In this connection it is interesting to note among the various uses to which aluminum is adapted, that its importance in war materials is largely due to its use in powdered form with nitrate of ammonia in making amonal, the high explosive that requires a detonator to set it off—minor uses in the French army are in making horseshoes, lances, buckles and insignia of rank.

On the 11th, the decline had gone to 58¢ to 62¢ for No. 1 Virgin; 53¢ to 56¢ for 99-98% pure remelt and 38¢ to 42¢ for No. 12 alloy remelt. On the 16th, 200 to 300 tons No. 1 Virgin ingots were offered at 59¢ with the probability that it would be shaded on a bid. Dealers were sellers rather than buyers in a weakening market with quotations of No. 1 Virgin 57¢ to 61¢; of 99-98% remelt, 51¢ to 55¢ and of No. 12 alloy remelt 37 to 41 cents.

On the 19th, a still weaker tone was developed on all grades. Virgin aluminum in 25-ton lots was offered at 58¢ while one lot of ten tons sold at 57.50¢ but dealers were practically out of the market, except at further concessions; jobbing lots were difficult to sell over 59¢. Throughout the remainder of the

month, the market continued quiet and barely steady until the last three days when remelt was held a little more firmly.

The English Ministry of munitions after having pegged the price of alum-

Aluminum, Silver, and Antimony Prices in January.

New York			
Day.	Aluminum. Cents.	Silver. Cents.	Antimony. Cents.
2	62.00	75.37½	14.37½
3	62.00	75.37½	14.37½
4	62.00	75.37½	14.37½
5	62.00	75.37½	14.37½
6	.....	75.37½	.....
8	62.00	75.25	14.31½
9	61.00	75.00	14.31¼
10	61.00	75.00	14.31½
11	60.00	74.62½	14.31¼
12	60.00	74.37½	14.31½
13	.....	74.37½	.....
15	60.00	74.37½	14.37½
16	59.00	74.25	14.62½
17	59.00	75.00	15.00
18	59.00	75.37½	15.00
19	58.00	75.87½	15.00
20	.....	76.12½	.....
22	58.00	76.62½	15.00
23	63.00	76.50	16.50
24	58.00	76.50	17.00
25	58.00	76.50	18.00
26	59.00	77.00	20.50
27	.....	76.62½	.....
29	59.00	76.62½	22.00
30	59.00	76.75	24.00
31	59.00	76.75	25.00
High	64.00	77.00	25.00
Low	50.00	74.25	14.25
Average	60.00	75.67	16.46

inum at £155 for a year, fixed the price on January first at £225 per ton at consumers' works, the price being based upon ingots of ordinary commercial purity. The price of remelted aluminum was also fixed at £210. These prices, of course, are below the prices current in commercial circles. According to the official ruling, the prices now established are the maximum to govern commercial transactions but a lower price may be fixed by agreement between buyer and seller based upon the aluminum content. The official prices are subject to change at the discretion of the Minister of Munitions.

Aluminum Prices in New York.

Extreme price fluctuations of pure aluminum (No. 1 Virgin 98-99%) in New York; by months:

	— 1916 —		— 1917 —	
	High.	Low.	High.	Low.
Jan.	56.00	53.00	64.00	56.00
Feb.	63.00	53.00		
Mar.	63.00	58.00		
April ...	61.00	59.00		
May	61.00	59.00		
June	65.00	59.00		
July	62.00	59.00		
Aug.	62.00	58.00		
Sept.	63.00	60.00		
Oct.	67.00	62.00		
Nov.	66.00	63.00		
Dec.	65.00	60.00		
Year	67.00	53.00		

Waterbury Spelter Averages.

	1913.	1914.	1915.	1916.	1917.
Jan.	7.56	5.74	6.55	22.25	13.05
Feb.	6.81	5.70	11.85	22.70	
Mar.	6.56	5.79	12.15	23.15	
April	6.08	5.50	13.85	23.20	
May	5.77	5.48	20.55	21.20	
June	5.50	5.37	25.60	17.40	
July	5.61	5.26	24.90	15.20	
Aug.	5.99	5.66	19.30	13.60	
Sept.	6.13	5.91	17.85	13.70	
Oct.	5.74	5.23	16.85	12.95	
Nov.	5.60	5.38	19.36	14.10	
Dec.	5.44	5.90	21.15	13.20	
Average	6.06½	5.53½	17.50	17.72	

Aluminum and Silver Prices.

	— New York —			
	Aluminum.		— Silver —	
	1916.	1917.	1916.	1917.
Jan.	54.33	60.00	56.77½	75.63
Feb.	57.50		56.75½	
Mar.	60.52		57.93½	
April ...	60.00		64.41½	
May	60.00		71.27	
June	62.09		65.02½	
July	60.15		62.94	
Aug.	59.48		66.08	
Sept.	61.90		68.51½	
Oct.	64.55		67.85½	
Nov.	64.80		71.60	
Dec.	63.40		75.76½	
Average	60.73		65.66	

Spelter (Monthly Averages.)

	— New York —		— St. Louis —	
	1916.	1917.	1916.	1917.
Jan.	18.18½	9.97	18.01	9.82
Feb.	20.09		19.92	
Mar.	18.10		17.91½	
Apr.	18.61½		18.11	
May	15.93		15.75½	
June	12.80		12.62	
July	9.70		9.52½	
Aug.	9.10		8.92	
Sept.	9.23½		9.06	
Oct.	10.01		9.83	
Nov.	11.92½		11.75	
Dec.	11.28½		11.11	
Average	13.75		13.57	

Lead (Monthly Averages.)

	— New York* —			— St. Louis —		
	1915.	1916.	1917.	1915.	1916.	1917.
Jan.	3.74	5.94	7.81	3.57	5.80	7.57
Feb.	3.82	6.23		3.72	6.17	
Mar.	4.03	6.83		3.98	7.46	
Apr.	4.19	7.50		4.11	7.67	
May	4.23½	7.50		4.16	7.28	
June	5.86	7.02		5.76	6.77	
July	5.74	6.54		5.52	6.20	
Aug.	4.75	6.25		4.59	6.19	
Sept.	4.62	6.75		4.53	6.71	
Oct.	4.59½	7.00		4.51	6.87½	
Nov.	5.15	7.00		5.07	6.96	
Dec.	5.34½	7.44		5.26½	7.53	
Average	4.67½	6.83		4.57	6.80	

* Trust price.

STEEL AND METAL DIGEST

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The design of this magazine is to provide a clear and concise record of the events and developments in the iron and steel and metal markets month by month, arranged in such a fashion that the reader has before him a true and accurate picture of the conspicuous features of each month, to keep the trade in direct touch with the many various factors that help to determine the course of prices and the trend of business, to preserve and tabulate a record of the price changes and the developments and features of the commodities in which buyers and sellers are interested so that they might have a comprehensive register on which to form an opinion of the market possibilities; and to do this completely, effectively and definitely and with a careful view to the necessities and requirements of the trade.—Prospectus of the STEEL AND METAL DIGEST, April, 1911.

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A Strong and Confident United States.

Considering the sensational and dangerous political developments of the past few weeks, beginning with the breaking off of relations with Germany, and with the prospect in the near future of actual war with that country, also the interference with our commerce with Europe by the submarine situation, and the freight congestion and embargoes on our railroads, so paralyzing to business, the business interests of our country have given a wonderful exhibition of strength, and confidence.

It is worthy of being carefully noted, as it indicates the strength of underlying conditions which few believe existed, and which gives warning to those who are pessimistically inclined. That we have gone through this crisis without hardly any effect on business and prices, and that with more serious developments facing us there is no nervousness in business, is nothing short of marvelous. Even the super-sensitive speculative markets have been little affected. What is the reason? It is that the recent and present operations and prices have been based, not on speculation, but on a legitimate demand in excess of the ability to fully supply, the demand of a country that is flooded with real prosperity and more money than

we can profitably employ in our domestic activities. That business interests have an overwhelming confidence in the continuation of these conditions. That very soon means will be taken to minimize the submarine danger and restore our European shipments to the former rate. That if war with Germany has to come it will have no effect on our domestic and foreign trade except to make for greater activities in many lines of business. That the effect of our joining the Allies would be to bring the war of Germany against civilization to an earlier end, and a return to normal world conditions. While peace will lessen some of our trade connected with ammunition, this will be more than overbalanced by the genuine activities of peace, and the making up of the world's industrial progress, which in all other countries except America have been held up for nearly three years. In this we start with material advantages. Also there has come over the country a wave of patriotism, belief in ourselves and country, belief in our civilization and institutions, which is rapidly making us from a conglomeration of people, drawn from all the nations of the world, for personal or selfish purposes, into what is to be a greater American

nation, able to face on all sides all questions and to manage them as a self-contained nation to our honor and profit. This war has made some wonderful changes, but when it is over it will be found that not least among those changes has been the re-incarnation of our country, socially, politically and industrially. Strong in the confidence in the righteousness and justice of any cause we may undertake, and in our power to engage in that cause to a successful issue, we calmly await the future.

The demand for materials continues to strain our ability to supply them and this is especially seen in the iron, steel, copper and lead industries. In spite of prices, such as the present generation never could have dreamed as ever being possible, the question on all sides is not one of price but of getting the goods, and there is nothing yet in sight indicating any setback to our manufacturing operations. In the iron, steel and allied trades, our mills are filled with orders for all they can supply for easily two-thirds of the year and in some lines for the entire year, while in important lines like heavy steel, plates, etc., some large orders have been placed running over 1918.

Our Annual Statistics.

Tenth Edition of "Metal Statistics" Now Ready.

The non-ferrous metal trade has always studied statistics, when it could get them. The iron and steel trade until recent years was indisposed to study statistics, even if it could get them. It considered itself superior, in a way, to precedents and statistics. Today there is no question. All the trade study statistics, and greatly to their profit.

The great increase in the circulation of "Metal Statistics" is testimony to

the increasing value assigned it by the trade. The 1916 edition had a circulation of 14,000, a very large circulation considering the business importance of those who consult the work. The circulation grows each year.

Not only has our annual publication, "Metal Statistics" made the statistics of the iron and steel and the non-ferrous metal trades easy of access, it has, we believe, helped greatly to popularize the study of statistics. The great ma-

jority of business houses no doubt carefully compile certain statistics of their own, but the field that any one office can cover is but a limited one, and even private records cannot be kept in such form as to make any large collection of figures easily accessible. One thing that "Metal Statistics" accomplishes is to bring a large mass of data into a surprisingly small compass, into a book that can be carried in the coat pocket and fits an ordinary pigeon hole.

The tenth annual edition of this reference work is now ready and is being distributed to subscribers of Steel and Metal Digest free of charge on request. While size is not necessarily the measure of merit, it may be of interest to indicate the thickness of the respective volumes, illustrating the growth of this compilation in its ten issues as follows:

1908—
1909—
1910—
1911—
1912—
1913—
1914—
1915—
1916—
1917—

While the increase in the number of subjects treated is well shown by the increased size of the book, the 1917 edition, 384 pages, the amount of information per page has also greatly increased, as the tables year by year have become more condensed as experience and the accumulation of information have permitted.

The statistical compilations are almost equally divided, nearly one-half relating to iron and steel and cognate products such as coal, coke, iron ore, cement, etc., the other half being devoted to the non-ferrous metals.

It is human nature, apparently, to be disinclined to use an index if there is any hope of finding a thing without. While "Metal Statistics" is supplied

with a complete index, it may be well to note that a great deal of pains has been taken to group related subjects together. Each of the non-ferrous metals, tin, copper, lead, spelter, etc., has its own section. In the case of iron and steel the following order is observed, as being the most convenient and logical. First there are a few general tables, index and composite prices with, for example, a table of total production in the United States. Thus while 29,916,213 tons of pig iron were produced in 1915, the country's production from the beginning through that year was about 550,000,000 tons. Then come raw materials, iron ore and coke. Next we have pig iron production, presented in various forms, then pig iron prices, then "unfinished steel," billets, sheet bars and rods, next the various finished products, structural shapes, etc., down to such finished forms as sheets, wire and nails, railroad spikes, rivets, shafting, etc., then production of steel in various forms and then the final ultimate product, which is scrap. Finally there are tables relating to the Steel Corporation and the railroads, a graphic presentation of the good and bad years in pig iron for 40 years past, and finally to deal with our foreign trade a table of exports and a table of import duties.

A "buyers' directory" on tinted paper at the end of the volume indicates whence various commodities, particularly the less familiar, are obtainable. Illustrative of the scope of this directory we mention a few commodity headings: Gold, hydrofluoric acid, iridium, iron ore properties, lithopone, munition parts, palladium, phosphorus, selenium, stokers, tantalum ore, valves, zinc sulphate. These are but a few of the listings. Buyers of various waste commodities are also listed.

The habit of consulting "Metal Statistics" for statistical purposes leads to the habit of consulting it for places "where to buy" and "where to sell."

Business Trends.

Stock Market Erratic, Waiting for War.

The events of February were the most important to the United States of any period since the great war started. The last day of January brought news to this country that the German Government had decided to disregard its earlier promises and commence afresh its ruthless submarine warfare and the stock market greeted this news on the opening day of February with the severest decline in prices experienced since the war began, the break ranging from 5 to 15 points overnight.

When the German Ambassador was dismissed on the third of the month, prices rallied sharply but the improvement continued only for a few days. The absence of definite developments, plus accounts of the activity of the new German submarine campaign created renewed bearishness and as a result prices tended to yield.

The more threatening aspect of our relations with Germany resulted in a further restriction of stock market activity about the middle of the month, investment dealings in stocks being conducted on a limited and cautious basis, while speculation was confined to a trifling exchange of contracts. The market held quiet but fairly steady.

Even up to the close of the month the international situation continued to dominate the securities market. Price movements were irregular, moderate strength and weakness succeeding each other in a way which deprived the market of any significance.

The month closed with the market dull and irregular.

Commodities at Highest Level.

Rising prices are still a world-wide characteristic as evidenced by the latest index numbers. "Bradstreet's" index number for February 1st is higher than ever and "Dun's" figure for the same date shows an increase of 4% as compared with January 1st. During the interval indicated, English prices went

up about 1% to the highest level of which there is record. Compared with a year ago when strength was also the outstanding feature of American commodities, prices are up 25% while in contrast with the corresponding time in 1915 displays a rise of over 44%. Compared with August 1st, 1914, which date marks the outbreak of the war, the present exhibit denotes an upward swing of 60%.

Speculation has played a very small part in the spectacular advance in commodity prices. Lasting and substantial factors outweigh those influences that tend to superinduce temporary fluctuations as a result of the serious aspect of our international affairs, the necessity for commodities being so strong as to react in the direction of upward prices. As "Bradstreet's" Journal explains the situation, "the United States is virtually the one big free market of the world, its position in this respect being strengthened by the fact that outside competition is well-nigh negligible, and, moreover, actual wants seem to absorb the more important commodities as soon as they become available, which, said in another way, means that the country is operating without surplus stocks. Then, too, railway embargoes hold back shipments, thereby making it essential for consumers faced by urgent needs to pay premiums for such supplies as may be available."

Foreign Trade Continues to Increase.

Another great surge forward was seen in foreign trade in January, export trade gaining \$92,000,000, or 17.6% over the high record month of December, 1916, while imports increased \$36,000,000, or 17.5% over the total for December, 1916, and fell only \$4,100,000, or 1.6% below the high record month of June last year. Compared with January a year ago exports show a gain of \$283,000,000, or 85%, while imports show a gain of \$57,000,000, or 30%.

For the seven months ending with January exports total \$3,614,244,066, as

Business Trends.

against \$2,182,898,752 in 1916 and \$1,334,660,148 in 1915, gains of, respectively, 65 and 170%, while imports for seven months total \$1,348,232,550, a gain of 23% over a year ago and of 45% over two years ago. As showing the directions in which imports are expanding, it is worth noting that 74.6% of the January imports were duty-free, as against 73.7% in January a year ago and 62.5% in January, 1915.

Our foreign trade for January and seven months compares as follows:

	January—	1917.	1916.
Exports	\$613,441,020	\$330,036,410	
Imports	241,674,851	184,350,942	
Excess of exports	\$371,766,169	\$145,685,468	
Thirteen months ended January 31st:			
	1917.	1916.	
Exports	\$6,094,864,609	\$3,884,707,257	
Imports	2,633,329,186	1,962,947,637	
Ex. of exports.	\$3,461,535,423	\$1,921,759,620	
Summary of trade since the war began:			
30 months—	Exports.	Imports.	
Merchandise.	\$10,562,177,344	\$5,060,608,509	
Gold	292,191,042	1,161,197,428	
Silver †	137,183,985	73,432,071	
Total	\$10,991,552,371	\$6,295,238,008	
† 29 months.			

Output of New Enterprises Continues Large.

The output of new enterprises continues on a heavy scale. This is indicated in papers filed in the Eastern States for companies with \$1,000,000 or over in February, representing a total of \$283,815,000, the best showing in several months. Incorporations in January amounted to \$244,450,000. However, in February a year ago they involved \$365,995,300, although it is to be said that approximately 60% of the total, which was exceptionally heavy, was contributed by three concerns. It will be recalled that in February, 1916, the \$150,000,000 Pan-American Petroleum & Transportation Company, which took over the Mexican Petroleum and sev-

eral other companies, was incorporated.

The grand total of all companies incorporated with a capital of \$100,000 or over, covering all States, amounted to \$350,509,500, against \$312,481,000 in January. The February figures a year ago were \$420,608,500.

Following are the comparative figures as specially compiled by The Journal of Commerce and Commercial Bulletin of companies incorporated in the Eastern States during the last three years, with an authorized capital of \$1,000,000 or more:

	1917.	1916.	1915.
Jan.	\$244,450,000	\$270,995,000	\$51,150,000
Feb.	283,815,000	365,995,300	53,950,000
Total	\$528,265,000	\$536,990,300	\$105,100,000
Mar.	194,750,000	70,050,000	
Apr.	166,650,000	32,200,000	
May	209,735,000	78,950,000	
June	264,350,000	181,247,100	
July	217,662,000	71,100,000	
Aug.	113,472,000	67,100,000	
Sept.	164,700,000	286,625,000	
Oct.	303,768,700	208,695,000	
Nov.	260,407,800	190,075,000	
Dec.	230,850,000	135,125,000	
Total	\$2,708,326,500	\$1,426,267,100	

World's Gold Output Smaller.

According to statistics published by the "Chronicle," the world's gold production in 1916 was valued at \$458,808,761, as compared with \$471,834,145 in 1915, the largest in history. In 1914 the output was valued at \$442,659,762. The world's total gold production amounted to 22,194,911 fine ounces, as against 22,825,015 ounces in 1915 and 21,413,708 ounces in 1914.

The production by ounces for the past three years follows:

	1916.	1915.	1914.
Australia.	1,930,056	2,389,618	2,501,152
Africa	10,811,359	10,598,411	9,808,940
U. S.	4,465,807	4,877,604	4,572,976
Canada ...	991,689	916,076	773,178
Russia ...	1,403,000	1,403,000	1,382,897
Mexico ...	300,000	317,305	231,628
All others	2,296,000	2,311,000	2,341,293
Total ..	22,194,911	22,825,015	21,413,708

Build More Ships.

The United States makes enough steel in three or four months to replace the entire merchant marine of the world. We produce around half of the world's output of coal, and we have, on this side of the Atlantic, about two-thirds of the world's production of petroleum, the fuel of the future in ocean navigation. In the first fifty years of the application of steam to navigation, about two-thirds of the steam shipping of the world was built in this country, and in the first twenty years of successful transatlantic steam ships, the United States had the largest and fastest steamers. We built the first successful steamboat in the world, in New York, we established the first regular international steamship line, built the first steamship that crossed the Atlantic, and established the first regular transatlantic steamship line.

Historically, we have every right to be the leading maritime nation in the world, and we have the practical advantages to-day if we would make use of them. Instead of holding a leading position, however, we rank below Norway, Holland or Denmark in the tonnage of ships engaged in foreign trade. Sixty years ago we had the greatest cargo carrying merchant marine in the world, but now we have almost no cargo ships, except a few that have taken refuge under the American flag since the war, and a few coasting ships that have gone into foreign carrying. We have built large and efficient cargo fleets on the Great Lakes, and a respectable tonnage in our coasting trade, but in the ten years before the war we built in American yards no cargo ships to engage in foreign trade.

Last year we launched a beggarly 200,000 tons of steel ocean going steamships. This year we may build enough to replace the tonnage sunk by submarines in February, but the work our shipyards are doing is principally for foreign owners. The progressive Norwegians are having ships built all over the world, wherever they can find a shipyard. One yard in Hongkong is building four steel steamers for Nor-

wegian owners, several large yards in the United States are working almost exclusively on Norwegian contracts, and a new yard in the south is building four wooden steamships for them. It was recently estimated by an official of the United States government that Norwegian immigrants in this country own property worth more than the entire national wealth of Norway. We must take off our hats in admiration of this little country of barren mountains with a bare strip of agricultural shore, but why should we let Norway go so far ahead of us as a maritime nation? We have single corporations, or single banks, that could "buy" the entire country, but we are so helpless as a maritime nation that we must be thankful for the ships they send us to carry out exports of steel and other commodities.

The hand of destiny is pointing to the United States as the maritime nation of the future, but we cannot realize this destiny until our people get busy and build more ships. England held the lead for several centuries because the most available timber for ship building grew in English forests. In the first half of the past century the United States came to the front, because English timber was being depleted while we had the greatest supply in our virgin forests. When iron began taking the place of wood, in the middle of the last century, England had the tremendous advantage of the cheapest coal and iron in the hands of an old and organized shipbuilding and seafaring nation.

From 1850 to 1860 England and the United States each had about a third of the merchant tonnage of the world, and the United States was apparently on the point of passing England and becoming the first maritime nation. The change to iron hulls saved England. A few Confederate privateers drove our sailing ships from the seas, and England, with her cheap coal and iron, became firmly entrenched in her position, which she has held ever since as the dominant maritime nation of the world. Germany came forward as a second na-

tion in merchant shipping, through the development of German resources in coal and iron, but a large share of the tonnage owned by the great German companies was built in English yards.

A new geographical factor has now appeared which will give the United States enormous advantages in the coming century as a maritime nation. Petroleum is taking the place of coal, and we have two-thirds of the world's production of petroleum on this side of the Atlantic, in the United States and adjoining districts of Mexico. In the fastest ships of modern navies, petroleum is burned under boilers in place of coal, because it makes more steam and speed.

In merchant ships, internal combustion oil engines, using crude petroleum or the residues of refineries, can be operated at about half the expense of a cargo ship burning coal. The oil engine uses less than half a pound of fuel per horse power hour, while the coal burning steamship uses about five times as much. The cost of the oil is about the same per ton, and it does away with the expense of a crew of firemen or stokers. The coal ship uses valuable cargo space to carry fuel, especially on long voyages, while the oil ship can

carry enough in its double bottom to take it around the world. South of the equator, east of Gibraltar and on the Pacific, coal is scarce and expensive, and a cargo ship that does not have to buy coal at distant ports has an enormous advantage.

England, Germany and other maritime nations of western Europe produce no petroleum. Russia, Roumania and Galicia have oil fields, but their output is more valuable for other local purposes than for foreign shipping, and they could not supply the household and industrial demand of Europe, right at their doors. Europe, in a word, has no fuel for the merchant shipping of the coming century, except what it may import from the United States, Mexico or the far Orient, while on this side of the Atlantic we have the world's surplus of petroleum.

The thrifty and progressive Norwegians and Danes have had oil ships in successful operation for many years, and are building large fleets of them for future traffic. American ship builders and shipowners have done almost nothing to grasp the opportunity that awaits us in the ocean carrying trade of tomorrow.

Changed Character of Iron and Steel Exports.

Statistics of total iron and steel exports by months and years are presented regularly in these columns. Below is given a table showing the items making up the totals, for the past five calendar years. This takes us back to 1912, the record year for iron and steel exports prior to the war.

The great change in the distribution of the tonnage, as to items, is readily observed. Exports in 1916 were almost 108% in excess of those of 1913. Some products did much more than double and some fell short of doubling, while a few showed an actual decrease.

There were two influences at work, in opposite directions. The one, that exports to neutral countries decreased,

the decrease in their buying power, both absolute and in relation to the high prices and high freights, being greater than the restriction in the sources whence they could obtain iron and steel, and the other that the demand from England, France, Italy and Russia, themselves producing countries and therefore not normally our customers, very greatly increased.

Any commodity that was formerly exported largely to neutral countries, and is not required by the countries of the Entente, will show a decrease. Any commodity that was not formerly exported to non-producing countries but is required by the countries of the Entente, will show an enormous in-

crease. Any commodity that partakes of the nature of both these classes will show increase or decrease according to the relative importance of these influences. That is the rule, and a scrutiny of the table, comparing 1913 and 1916 and observing that the total showed a doubling, will show how it works out.

Thus radiators and house heating boilers were exported to non-producing (now neutral) countries and their exportation decreased 59% when the total exports increased 108%. Cut nails, which for some reason or other were always preferred to wire nails by certain South American users, decreased by one-half instead of doubling. Pipe and fittings, which formerly went all over the world with remarkable freedom, decreased slightly instead of doubling. A reference to detailed statistics shows that there was a very

large decrease in the exports to Canada as well as to most other countries. The exports to the United Kingdom increased, but they were small to start with.

Rails present the interesting case of having been subject to both the influences mentioned. The exports to neutral countries fell off very greatly. South America from 113,000 to 23,000 tons, for instance. As rails are a munition of war, however, their exportation to the Entente countries became heavy, growing from practically nothing. Russia took 114,000 tons in 1916. The other Entente countries not being mentioned separately in the statistics, but undoubtedly taking large tonnages. The combination of the two divergent influences resulted in an increase of 21% in rail exports, instead of 108%.

Iron and Steel Exports, Calendar Years, Gross Tons.

	1912.	1913.	1914.	1915.	1916
Scrap	105,965	97,429	33,134	79,361	212,765
Pig iron	272,676	211,648	114,423	224,509	612,241
Billets, blooms, etc.	294,818	91,847	50,496	560,704	1,508,727
Wire rods	64,978	61,637	61,856	165,014	158,284
Rails	446,473	460,553	114,680	391,379	540,349
Structural	288,164	403,264	182,395	232,139	301,649
Steel bars	208,213	211,716	123,009	425,678	774,455
Iron bars	21,926	16,615	5,226	39,710	74,070
Sheets and plates	546,521	.....	.....	.....	.....
Steel plates .....	.....	223,814	111,642	223,805	276,034
Iron sheets and plates .....	.....	21,768	7,555	25,543	.....
Steel sheets .....	.....	149,634	120,435	94,349	107,721
Galvanized sheets .....	.....	77,210	40,463	75,906	85,304
Tin plate	81,694	57,812	59,549	154,642	227,391
Pipe and fittings	249,856	301,790	199,622	.....	.....
Wrought pipe and fittings .....	.....	.....	.....	129,966	158,350
Cast pipe and fittings .....	.....	.....	.....	47,022	70,223
Hoop, band and scroll	12,557	16,841	9,954	29,249	43,.....
Railroad spikes	6,807	11,329	6,915	13,256	23,852
Plain wire	148,653	108,233	87,022	224,972	264,142
Barb wire	96,059	82,051	93,897	248,611	418,582
Wire nails and spikes	68,319	43,637	36,124	91,584	150,173
Cut nails and spikes	9,311	3,790	3,423	4,236	4,752
Other nails, and tacks	8,198	3,969	3,182	9,251	12,354
Bolts, nuts, rivets, etc.	9,986	22,737	15,127	23,536	29,232
Horse shoes	510	1,247	5,903	15,863	7,806
Radiators, etc.	5,912	8,064	3,572	2,291	2,424
Total	2,917,596	2,715,625	1,549,554	3,532,606	6,110,790

German Purpose.

There seems to be a general misunderstanding in the United States of the purpose of the German submarine campaign, which has been going on for two years. The Germans have been very successful in making us believe that they are carrying it on in retaliation for the food blockade which England has maintained against Germany, and many people in this country think they have a right to do it. The Germans have been very thorough in their publicity work. They have bungled some of it, but on the whole they have had remarkable results in misleading the world regarding their military objects in the war.

In the submarine campaign their purpose is to destroy the world's shipping as a means of isolating and conquering England and France, and they have made very substantial progress. About 5,000,000 tons of ships have been sunk. Shipbuilding since the war has not been on a large enough scale to replace normal marine losses and depreciation, so that the ships sunk represent practically a net loss in the world's tonnage.

The Germans know perfectly well that they can never maintain a legal blockade of England or France with submarines. They can only hope for a progressive or ultimate blockade. Only a small number of ships is sunk on any one voyage, but each torpedo that goes home destroys a vessel that might carry a hundred cargoes of food and munitions during the remainder of the war. As a "progressive" blockade the submarine campaign must be recognized as a military success. Ocean rates to Europe have advanced to so high a figure, and space has become so scarce, that only munitions and the most urgent necessities can be carried, and the shortage of tonnage is growing steadily worse.

In the wars with Napoleon there was the same malicious destruction of shipping. About two-thirds of the English merchant marine was destroyed, and Napoleon burned millions of dollars of American ships, apparently for no pur-

pose excepting to deplete the world's shipping as a means of ruining England. Some of these ships were enticed into French ports by misrepresentation, and then treacherously destroyed. Napoleon did not have any submarines, or he might have gone much farther in destroying the world's shipping.

In 1856 the leading maritime nations tried to protect themselves for the future against this malicious destruction of shipping, by a treaty which is known as the Declaration of Paris. It was signed by Prussia, France, England, Russia and all the nations now at war which were then recognized as maritime powers. It has been observed by them as international law in all wars until the present one.

One of the four "principles" or declarations to govern war at sea, which were adopted in this treaty, was: "Blockades, in order to be binding, must be effective, that is to say, maintained by a force sufficient really to prevent all access to the coast of the enemy." In our Civil War, when we maintained a blockade of southern ports, European nations refused to recognize it until we could show that all southern ports were effectively blockaded by a warship stationed in front of each port and in sight of it.

The blockade of Germany which England has maintained does not violate the Declaration of Paris, because it is "effective." There probably has never been a blockade in the history of the world which has been so successful in preventing cargoes from getting through. It has been estimated that in our Civil War one-third of the blockade runners succeeded in getting through by slipping in at night and landing their cargoes in small bays and inlets. Nothing like this has occurred in the German blockade. Even Holland and the Scandinavian countries have been effectively stopped from importing contraband to be re-shipped into Germany.

The submarine blockade, or attempted blockade, of England, fails entirely to measure up with the requirement

of international law. For two years after it was undertaken, less than 1% of the cargoes bound to England and France were intercepted. In all the protests of neutral countries like Brazil, this point in international law has been maintained, that the blockade is not effective, and is therefore illegal.

The Declaration of Paris was silent on the subject of destroying prizes taken in war, and this subject was bungled in the Declaration of London, which was drawn up in 1909 as an outgrowth of the Hague peace conferences. The Spanish Government in its protests denies the right to destroy prizes, and this harmonizes with common sense. The Declaration of Paris is emphatic in two other principles which cover the subject indirectly. It declared that: "The neutral flag covers enemy's goods, with the exception of contraband of war"; and "Neutral goods, with the exception of contraband of war, are not liable to capture under the enemy's flag".

Under international law the owner of a ship or a cargo is entitled to the decision of a prize court to determine the status of a ship or any goods in its cargo. Here, again, the English have conformed with international law, by bringing into port and before prize courts all the ships they have intercepted or captured in the course of their blockade of Germany. In the submarine campaign ships are sunk recklessly, and the owners of neutral ships as well as of cargoes on both neutral and belligerent ships are denied their legal rights.

About a million tons of neutral ships have been sunk, belonging to Norway, Holland, Denmark, Sweden, Spain, Greece, the United States and other countries not involved in the war. A few days ago a whole fleet of Dutch ships bound for Holland with cargoes of grain went to the bottom, and Holland is threatened with starvation. Spanish ships loaded with grapes have been sunk in the Mediterranean, when they were just leaving Spanish ports. An American ship loaded with lumber for lemon crates, bound for Italy, was sunk recently. A Belgian relief ship, returning in ballast to the United States, was sunk; although it was engaged in service which was a legal obligation of Germany, the feeding of conquered people. A Dutch ship, carrying no contraband, and committing no possible offense under international law, was sunk off our coast of Nantucket.

The submarine campaign is not a blockade, and all the talk and proclamations trying to make it appear as a blockade is mere dust thrown in the eyes of the world. The purpose is to destroy the world's shipping as a means of isolating England and France. So long as there are any ships afloat, England and France will get them to carry food and munitions, and the submarine campaign cannot become a conclusive military measure or have any logical purpose until all the shipping of the world has been sunk.

What will the United States do without ships to carry our foreign commerce?

What Wall Street Thinks of the Metal Market.

By Ray Vance, Director Brookmire Economic Service.

Since some of the readers of this magazine probably look with a good bit of contempt on the opinions expressed by what is commonly called "Wall Street," I wish to draw a distinction between what Wall Street says, and the things Wall Street thinks.

What Wall Street Says is Negligible.

Most of the talking for publication among the men who are classed together as "Wall Street," is done by three classes, whose opinions really deserve as little attention as they usually get. These are:

1st. Press agents for speculative pools who consciously try to mislead the public for private advantages.

2nd. Professional tipsters and traders, with whom it is so frequently a case of "the wish being father to the thought" that the value of their opinion is practically nothing.

3rd. The market letters of brokers and newspaper write-ups which are sincere in at least a majority of the cases, and in many instances have opinions really worthy of serious consideration. The fact, however, that these worth while opinions are mixed with so much that is either insincere or positively foolish, gives at least a considerable ground of justification for the lightness with which they are regarded by the average business man.

All three of these classes are constantly on the lookout for tips from persons actually engaged in the metal trade. At best, their opinions are an echo of what has been previously concluded in the metal trades themselves, but I wish to call attention in this article to a different kind of Wall Street from that which is constantly talking for publication.

What Wall Street Thinks is Worth While.

There is a group in Wall Street whose opinions rarely see publication, except in the language of "Dollars per share," or in other words, it is their money that does the talking. I do not mean to say

that this group, either individually or collectively, is always right, but because being right means profits, and being wrong costs real cash, we can be certain that they are at least sincere.

The man who backs his opinion with his own money will not last very long if he is consistently wrong. Therefore, the part of Wall Street about which we are talking at the present time, is not only always sincere, but in order to survive, it must be right more than half the time. As a matter of fact, its expressions of judgment may be obscured for a few months at a time by the operations of the public who come in to take flyers in the market, but I have little hesitation in saying that year in and year out, the movements of stock prices on the New York Stock Exchange will come more nearly to expressing the keenest business judgment of the United States, than any other one feature which is published in our newspapers, magazines or trade journals.

The Language of Wall Street's Opinion.

Because this section of Wall Street expresses its opinion only in "Dollars per share," I have made up a chart showing the movements of a group of standard steel stocks, a group of oil stocks, one of railway equipments and one of electrical supplies from the beginning of 1911 to March 1st, 1917; also a similar chart for automobile stocks from the time when they became prominent at the beginning of 1915 up to the present.

It is interesting to note in the movements of 1912 and 1913, that Wall Street recognized both the coming of the boom and its close months before any evidence of it was seen in the price movement of the metal trade. In view of this it is interesting to trace through the bull market which culminated last Fall the opinion that Wall Street has held of the outlook for different groups of manufacturers in this period of prosperity.

Wall Street first became fully convinced in the early Spring of 1915 that a general period of prosperity for American manufacturers was at hand and in a characteristic way began to bid for the stocks of industrial companies, producing a general rise in every group. This had its first culmination in what might almost be called a "speculative frenzy," in the Fall of 1915. When we look at the different groups of stocks, however, there is no doubt of the keen and accurate judgment with which different groups were gauged.

Up to the close of 1915, steel prices had barely recovered to the levels at which they stood in 1912 and 1913, and the price of copper was less than three cents per pound above where it sold for months in 1912. Wall Street saw the large volume of business being done by the manufacturing companies at war-time prices and saw that they were paying steel producers no more than the ordinary prices of peace times and very little more to the copper companies. As a result, the speculative buyers who watch fundamental conditions closely spent most of their enthusiasm on the stocks which were then "War Babies," of which the automobile stocks and railway equipment issues are a good example.

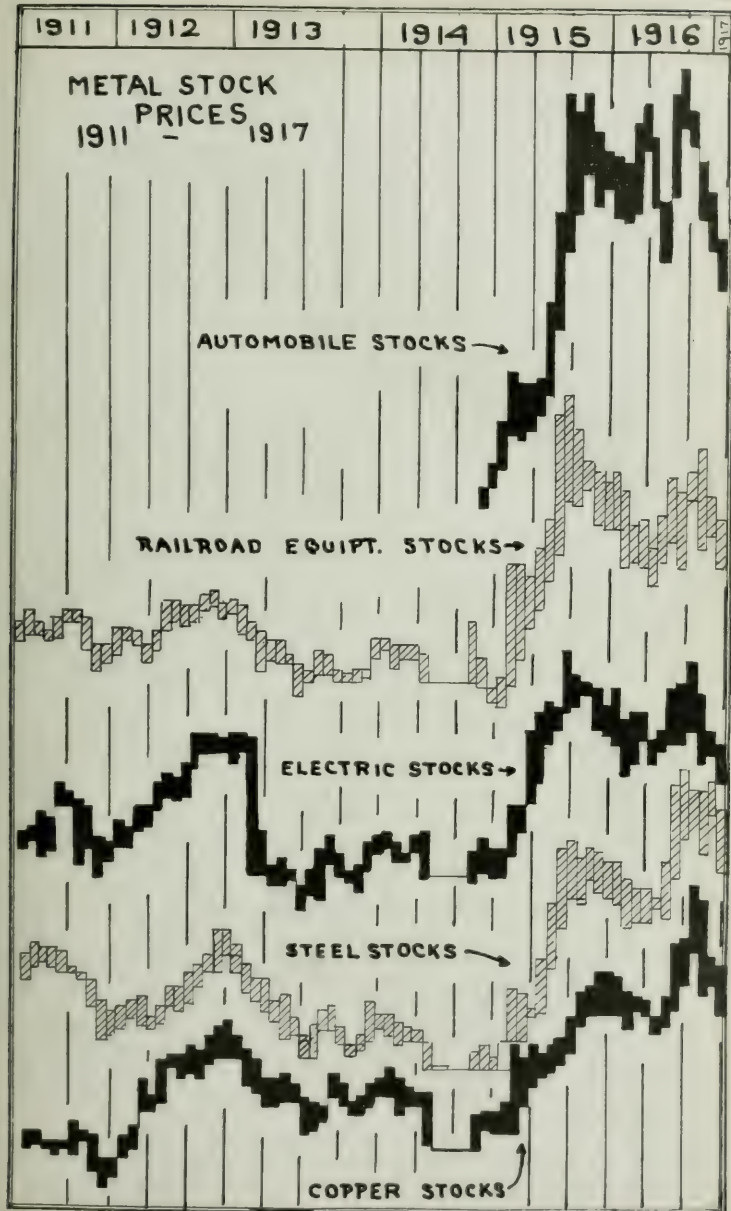
Then followed the period of discouragement in the Summer of 1916 when war orders were very slow in coming in and when the stopping of gold imports threatened us with a period of tight money.

Last Fall saw a new crop of war orders and fresh imports of gold and what impressed most people as simply a fresh wave of bullish sentiment, took full possession of a speculative security market, but this time steel and copper producers' stocks were the center of enthusiasm. Throughout the months from September to November, 1916, speculative Wall Street emphatically rendered its decision that last Fall's group of war orders were of relatively small benefit to those companies which

received them directly but that the chief profits would come to the producers of raw material. Constantly rising prices of steel and copper have amply justified this conclusion and it is doubtful whether at the present time the average manufacturer of products, whose raw material is either steel or copper, is making any more than his normal profit in peace times.

So far as metal prices for 1917 are concerned the opinion of Wall Street may be said to have already been registered in the movements of these different stock groups since the Kaiser asked for a formal peace conference in December. The market at that time had a large public following whose speculations had been largely on a basis of blind faith in four or five years continuation of war, and in the first shock, every kind of stock dropped rapidly. But so soon as the real opinion of Wall Street had time to manifest itself, diverse movements set in. Those companies which must use either steel or copper as their raw materials continued to decline, but the thoughtful buyers have stubbornly refused to join any movement for thorough-going liquidation of the securities of the primary steel and copper producers.

The general movements of the market indicate beyond a doubt that security speculators of every grade have lost a large percentage of the confidence in the continuation of prosperity which they had last November. To that extent they are less optimistic about the future of metal prices. So far as the secondary manufacturers are concerned our friends in the stock market give full assent to the expectation that their profits will be ground away during the coming year between the mill stones of high cost on one hand and slackening business on the other, but regarding the prices to be obtained and the profits to be made by the primary producers, Wall Street's revision of opinion since last November appears to have been relatively small.



Steel Plants.

XVI. Imperial Works of Japan.

About 1903 the Japanese government completed the Imperial Steel Works of Japan, located at Wakamatsu, in the southeastern part of Japan. Two blast furnaces were built, a third being added in 1909. The ore comes from China and Corea, by company boats and to the plant's own harbor. The three blast furnaces would be rated in the United States at 800 or 900 tons of pig iron daily but on account of the character of ores and coke used the actual output is probably between 600 and 700 tons. The coal must be washed and also compressed, but even then it does not produce strong coke. Semet Solvay ovens are used, and there is a slag cement plant.

The plant as built contained two 10-ton Bessemer converters and seven 25-ton basic open-hearth furnaces, the two units being served by two 200-ton metal mixers.

The rolling equipment comprises a 44-inch reversing blooming mill, rail mill of three stands of 30-inch two-high reversing rolls, large bar mill of three

stands of 22-inch two-high reversing rolls, small bar mill, Belgian or looping type, with two-high 18-inch roughing rolls and five stands of 12-inch three-high rolls, rope driven, a rod mill, a two-high reversing plate mill with rolls 40x160 inches, a three-high plate mill with rolls 32x160 inches and two 22x60 inch sheet mills, the sheet mills being supplied with sheet bars made by cutting up plates from the large plate mill. There are also wire drawing and sheet galvanizing departments.

In its early years the operation of the plant suffered from inefficient performance of labor, the men working intermittently and getting less results from the equipment even when working at their best than would be expected in the United States. Conditions, however, are understood to have been improving of late. Estimates made some time ago indicated that compared with works in the United States correspondingly equipped the number of employes in proportion to output stood in about the ratio of ten to one.

Topical Talks on Iron.

XVII—Annealing.

Annealing and heat treating of steel are distinct processes. In the broad sense heat treatment of steel is any application of heat whereby the physical character of the steel is altered and thus it includes tempering. In the narrower sense, as used commercially, "heat treatment" covers the processes whereby steel is made more tougher and more durable. These processes are relatively new and involve chiefly a change in the size and characteristics of the crystalline structure.

In the common form of annealing, on the other hand, two results are obtained, the removal of internal strains produced by cold working and the restoration of the crystals or grains to their

normal shape when deformed by cold working. The "critical point" in steel is about 600 degrees Centigrade or 1110 degrees Fahrenheit. Steel must be heated to above this point for the crystalline structure to be altered, and ordinary annealing involves heating the steel to a point just below, whereby internal strains are removed and the crystals restored to normal shape. When the annealing temperature is somewhat higher the operation partakes of the nature of what is popularly called "heat treatment".

The common process of annealing, therefore, is really merely one of restoring a condition to the steel that was destroyed by cold working. In the manu-

fracture of black plates for tinning the second annealing is made necessary by the cold rolling process, which is quite severe as it is necessary for the sheet to have a very smooth surface. The first annealing of black plate and the ordinary annealing of sheets, is made necessary by what occurs to the steel at the hot rolls, the final passes being at such a low temperature that the steel is made hard.

Other cold working processes also introduce the necessity for annealing. Cold drawn seamless tubing, for instance, must be annealed and the same is true in wire drawing, only a certain number of operations being possible until the steel becomes so hard and brittle that its original condition must be restored before it can be worked further.

The process of annealing merely requires that the steel be brought to the necessary temperature. It does not need to be held there. In the case of soft steel the rate of cooling is not important, while steel containing enough carbon to have a hardening effect must be cooled slowly or it will harden. The annealing of light articles such as tubing and wire therefore requires but a

short time. In the annealing of sheets, to prevent oxidation, a large mass of sheets are piled on an annealing stand and covered with an annealing box. In order that the heat may penetrate to the center without the outer portions being made too hot it is necessary that the operation be conducted slowly. Theoretically a single sheet could be annealed in a few seconds but in practice the annealing of a box of sheets requires many hours.

Tin Plate Movement.

United States imports and exports of tin plate in gross tons have been as follows, the imports of course including those for drawback purposes:

	Imports.	Exports.
1906	56,983	12,082
1907	57,773	10,293
1908	58,490	11,878
1909	62,592	9,327
1910	66,640	12,459
1911	14,098	61,466
1912	2,053	81,694
1913	20,680	57,812
1914	15,411	59,549
1915	2,350	154,642
1916	1,008	227,391
January, 1915	1,608	7,014
February	265	5,834
March	53	10,500
April	44	9,084
May	24	7,218
June	75	7,582
July	71	13,895
August	50	21,939
September	31	22,271
October	15	17,018
November	54	15,538
December	61	15,972
January, 1916	62	12,178
February	107	13,534
March	44	20,364
April	179	21,385
May	39	25,585
June	91	29,751
July	150	18,760
August	105	18,757
September	51	18,770
October	111	11,195
November	38	15,816
December	34	18,229

Car and Locomotive Buying.

Freight Cars Ordered.

1915: Domestic	105,000	
Export	20,000	
Total, 1915		125,000
1916: Domestic	169,000	
Export	29,000	
Total, 1916		194,000
1917: Domestic	17,906	
Export	18,500	
January		16,840
February		19,566

Locomotives Ordered.

1915: Domestic	1,500	
Export	800	
Total, 1915		2,300
1916: Domestic	2,850	
Export	2,900	
Total, 1916		5,750
1917: Domestic	839	
Export	267	
January		807
February		299

The Iron and Steel Situation.

Stiffening Markets in February.

The diplomatic break with Germany of February 3rd was followed by increasing activity in the iron and steel markets, and rising prices at many points. It is better to make the statement as one of sequence of facts than to make a tacit assumption that there was a cause and effect. Similarly, it is well to say that the German peace proposal of December 12th was followed by decidedly quieter conditions in the market. In each case the influence of the holiday period with the customary year end adjustments is to be taken into account. There was reason to believe that the quietness of the last three weeks of December was attributable in considerable part to this seasonal influence. On the other hand there is less reason to attribute the increase in activity in February to the passing of the seasonal influence, because such increase in activity could occur in the latter part of January, but no distinct improvement was noted even in the first few days of February.

Price Advances Important.

It is necessary to emphasize the fact that iron and steel prices have been advancing, for there has been a change in the view point whereby there is a disposition to underrate the importance of advances. When the market was in full swing, September to November, 1916, inclusive, announcement of a price advance met the attitude "there's another advance!" After December 12th the observer unconsciously put himself in the attitude of regarding the market on the defensive, and announcement of a price advance was received in a different spirit, there being a disposition to regard the advance as "on paper," or exceptional, or something of that sort. In some cases it was reasoned that the product advanced had been low relative to prices of other products, hence the advance was merely an exceptional one, by way of equalization.

The price advances have been more important than the general appraisal would have it. The advances since December 12th have covered every im-

portant finished steel product, bars, plates, shapes, wire products, tubular good, sheets and tin plates. Averaging prices, as is done in our **composite finished steel**, the average advance from January 1, 1915, when the movement started, to December 15th, was \$1.73 per net ton per month. From December 15th to March 5th, including the advances of the latter date in wire and pipe, the average was \$2.16 per month, or one-fourth more than the previous average.

This is a very significant and important fact. If, during the period in which common thought was first directed to the possibilities of the war being terminated at an early date, and was afterwards directed to the probability that the United States would enter the war, prices advanced more rapidly than formerly, no one can venture to think that price advances have ceased, that the market has reached its top.

Advances in Pig Iron.

The facility with which pig iron has advanced in the past six months is in striking contrast with its sluggish responsiveness in the earlier period, during which conditions in the steel market were growing stronger rapidly and prices were advancing sharply. In first seven months of 1915 and in the first eight months of 1916 pig iron did not advance. The advances were confined to the last five months of 1915 and to the past six months. There were buying movements from which much greater results could have been expected.

The advance of the past six months, on the other hand, has occurred with relatively light buying. Producers became more courageous or consumers became more fearful. Probably both influences contributed to the facility of the advance. Most of the pig iron production for the first half of 1917 had been sold before the advance of the past six months started, but it has been brought up to date without a very large part of the second half output being sold, and thus many consumers are faced with the prospect of paying almost

twice as much for their second half deliveries as they will have paid for their first half iron.

The advances in pig iron in February are to be regarded as in the nature of equalizations, when certain descriptions of iron, or iron in certain districts, had become extremely scarce for early deliveries, and certain prompt deliveries therefore advanced, other market departments then following.

For instance, at the beginning of February valley foundry iron was readily bringing \$35. furnace, for prompt delivery—not prompt shipment, as there were sellers who could ship promptly but not over such railroad lines as

would ensure dispatch, while the Chicago market was \$30 at furnace, when normally that market is 50 cents to \$1.50. An additional stage to the lack of parity was the fact that while Chicago iron was low relative to valley, southern iron was low relative to Chicago, as it was not over \$24, Birmingham, at the outside, with a \$4.00 rate to Chicago against the Chicago district's switching charge of 50 cents, making a disparity at Chicago of fully \$2.50 between southern and local iron. Only occasionally for years has southern iron been able to penetrate to Pittsburgh, but at that time with a Birmingham rate to Pittsburgh of \$4.55 and

Pig Iron Prices.

(Averaged from daily quotations; at Philadelphia, Buffalo, Cleveland and Chicago, prices are delivered.)

MONTH	Bessemer	Basic, Valley	No. 2 fdy.	Basic, Phila.	No 2 X fdy. Phila.	Buffalo	Cleve- land.	No. 2 fdy. Chi- cago.	Ferro- mangan- ese.	Fur- nace coke	
Jan. ..	13.75	12.50	12.75	13.50	14.45	13.25	13.25	13.45	9.50	68.00	1.55
Feb. ..	13.64	12.50	12.75	13.50	14.50	13.25	13.25	13.50	9.50	68.00	1.55
Mar. ..	13.60	12.50	12.75	13.50	14.05	12.74	13.25	13.39	9.42	78.00	1.53
April ..	13.60	12.50	12.75	13.40	14.05	12.69	13.25	13.50	9.25	78.00	1.55
May ..	13.60	12.50	12.75	13.25	14.25	13.17	13.25	13.50	9.47	91.00	1.50
June ..	13.75	12.57	12.70	13.42	14.25	13.08	13.25	13.50	9.50	100.00	1.50
July ..	13.98	12.87	12.72	13.83	14.28	12.83	13.20	13.50	9.61	100.00	1.67
Aug. ..	15.12	13.98	13.71	14.83	14.91	13.83	14.08	13.88	10.77	100.00	1.54
Sept. ..	15.93	14.80	14.50	16.70	15.91	15.43	15.04	14.30	11.22	107.50	1.66
Oct. ..	16.00	15.00	14.58	17.25	16.25	15.75	15.25	15.08	11.71	105.00	2.18
Nov. ..	16.67	15.88	15.82	17.40	16.95	16.73	16.47	17.50	13.14	100.00	2.35
Dec. ..	19.19	17.73	17.98	18.01	18.81	18.02	18.13	18.48	14.00	105.00	2.85
Year ..	14.90	13.78	13.81	14.88	15.25	14.23	14.31	14.47	10.59	91.71	1.79
1916											
Jan. ..	21.00	18.00	18.50	19.24	19.71	18.25	18.80	19.00	14.92	115.40	3.14
Feb. ..	20.50	17.88	18.50	19.50	19.75	18.25	18.80	19.00	14.64	139.00	3.41
Mar. ..	20.67	18.48	18.50	19.60	19.77	18.77	18.86	19.24	15.00	175.00†	3.45
April ..	21.00	18.48	18.50	20.50	20.20	19.25	19.00	19.50	15.00	175.00	2.45
May ..	21.00	18.21	18.44	20.50	20.25	19.15	19.08	19.50	15.00	175.00	2.34
June ..	21.00	18.25	18.39	19.90	20.04	18.75	19.30	19.50	14.63	175.00	2.54
July ..	21.00	18.00	18.25	19.15	19.75	18.75	18.80	19.50	14.00	175.00	2.65
Aug. ..	21.00	18.00	18.27	19.00	19.58	18.75	18.57	19.17	14.00	175.00	2.75
Sept. ..	21.32	18.27	18.58	19.50	19.50	19.04	18.67	18.75	14.38	165.00	2.94
Oct. ..	23.81	20.17	20.56	20.52	20.58	20.48	19.87	19.79	15.35	165.00	5.69
Nov. ..	29.40	24.80	25.60	24.68	25.00	27.31	24.58	25.70	19.72	165.00	6.91
Dec. ..	34.84	29.84	29.84	29.84	30.27	33.81	30.48	29.34	23.38	170.00	9.00
Year ..	23.05	19.87	20.16	10.96	21.20	20.67	20.40	20.67	15.84	164.12	3.94
1917.											
Jan. ..	35.00	30.00	30.00	30.00	31.48	35.25	30.95	30.50	24.27	175.00	9.44
Feb. ..	35.00	30.00	30.00	30.45	31.96	35.25	31.78	31.42	24.13	21.00	10.57

* Contract prices, f.o.b. Baltimore, ÷ E. seq. domestic delivered x Prompt f.o.b. Chicago 1916 oven.

a valley rate of 95 cents, the disparity was \$7.40.

On account of the traffic situation the districts were isolated and each made its own market, for prompt delivery. During February the process of equalization started, Chicago advancing considerably and Birmingham still more, with a prospect that Birmingham will soon be fully established at \$30 minimum. In the first two or three days of March, however, valley iron established a second half market at \$35, when that price had originally been purely one for small lots for quick delivery.

While the process of equalization has been working, it has been working slowly and the influences dis-

torting the price structure have continued to work. The railroad situation was, as already suggested, largely responsible for the disparities, but there has remained a curious one with which the railroads have no connection, for at the beginning of February second half valley foundry iron was established at \$35 while basic iron was quotable at \$30. The cost of production is about the same and the two grades have usually been not over 25 cents apart.

While there has been an extreme scarcity of pig iron at some consuming plants, no adequate case has been made out for there being a continuous scarcity of pig iron in general. There remain some stocks, and furnaces are

Finished Steel Prices.

(Averaged from daily quotations, f.o.b. Pittsburgh.)

1915	Shapes	Plates.	Bars.	Pipe.	Wire.	Grooved		Sheets		Tin plate.	Comp. Fin. steel.
						Wire Nails.	Steel Skelp.	Black.	Galv.	Blue Annld.	
January	1.10	1.10	1.10	81	1.34	1.54	1.13	1.80	2.80	1.30	1.4554
February ...	1.10	1.10	1.10	80 $\frac{3}{8}$	1.38	1.58	1.13	1.80	3.09	1.30	1.4716
March	1.15	1.15	1.15	80	1.40	1.60	1.13	1.80	3.40	1.30	1.5098
April	1.20	1.20	1.20	80	1.37	1.57	1.13	1.80	3.40	1.33	1.5357
May	1.20	1.17	1.20	79	1.35	1.55	1.14	1.80	3.60	1.35	1.5381
June	1.20	1.15	1.20	79	1.35	1.55	1.15	1.75	4.80	1.33	1.5312
July	1.25	1.22	1.27	79	1.38	1.58	1.18	1.74	4.65	1.32	1.5692
August	1.30	1.26	1.30	79	1.38	1.61	1.25	1.85	4.40	1.37	1.6059
September .	1.33	1.33	1.35	79	1.54	1.69	1.28	1.91	3.68	1.51	1.6506
October	1.44	1.42	1.43	79	1.63	1.78	1.40	2.03	3.57	1.60	1.7264
November .	1.63	1.63	1.63	78	1.72	1.87	1.56	2.30	4.07	1.90	1.9089
December ..	1.75	1.75	1.75	78	1.88	2.03	1.70	2.53	4.75	2.26	2.0329
Year	1.30	1.29	1.31	79 $\frac{1}{4}$	1.48	1.66	1.27	1.94	3.85	1.49	1.6280
1916											
January	1.87	1.90	1.87	76 $\frac{3}{4}$	1.98	2.13	1.75	2.60	4.75	2.55	2.1410
February ...	2.06	2.16	2.06	75 $\frac{1}{2}$	2.11	2.26	1.94	2.60	4.80	2.65	2.2988
March	2.36	2.53	2.36	73 $\frac{3}{8}$	2.25	2.40	2.24	2.73	4.93	2.85	2.5579
April	2.50	2.75	2.50	71 $\frac{1}{2}$	2.25	2.40	2.35	2.89	5.00	2.95	2.7166
May	2.50	2.83	2.50	70	2.45	2.50	2.35	2.90	5.00	3.00	2.8043
June	2.50	2.90	2.50	70	2.45	2.50	2.35	2.90	4.80	3.00	2.8300
July	2.50	2.90	2.50	70	2.45	2.50	2.35	2.90	4.40	2.90	2.8425
August	2.54	2.94	2.56	70	2.53	2.58	2.35	2.90	4.20	2.90	2.8588
September ..	2.60	3.00	2.60	69 $\frac{1}{4}$	2.55	2.60	2.35	2.91	4.20	2.90	2.9013
October	2.63	3.07	2.62	69	2.59	2.64	2.40	3.23	4.50	3.15	2.9747
November .	2.86	3.33	2.76	68 $\frac{1}{2}$	2.79	2.84	2.75	3.72	5.34	3.66	3.2036
December ..	3.03	3.53	2.93	66	2.95	3.00	2.85	4.40	6.27	3.65	3.4679
Year	2.50	2.82	2.48	70 $\frac{7}{8}$	2.45	2.53	2.34	3.06	4.85	2.99	2.8009
1917.											
January	3.11	3.61	3.00	64	2.95	3.00	2.85	4.50	6.50	4.25	3.5249
February ...	3.25	3.75	3.00	62 $\frac{1}{8}$	2.95	3.00	2.85	4.63	6.75	4.50	3.6529

unlikely to lose production, from coke scarcity, etc., indefinitely in the future as they did during December, January and February. In those months production throughout the country averaged at least 10% below normal, merchant furnaces and steel works furnaces being about equally affected.

Transportation.

Traffic conditions were very bad in December and January and there was only a very slight improvement in February, scarcely enough to be noticed. Supplies of coke at blast furnaces were insufficient, and steel production suffered in some instances from lack of fuel. Shipments of steel were still less than production, being hampered by car

shortage and embargoes. The accumulations of steel at mills, awaiting shipment, are the largest in the history of the industry, but the tonnage is very small compared with the tonnage the consumers and distributors have sometimes carried. At present the buyers have no stocks.

Efforts have been made by the railroads and the Interstate Commerce Commission to improve car supplies, by controlling their movement, but these things afford relief only in spots. The general situation is that there is not enough motive power to get from cars the service that should be expected of them. As the temperature rises the steaming capacity of the locomotives

U. S. Steel Corporation's Operations.

Earnings and Unfilled Orders.

Earnings by Quarters.

Net earnings by quarters since 1911:

Quarter.	1916.	1915.	1914.
1st	\$60,713,624	\$12,457,809	\$17,994,382
2nd	81,126,048	27,950,055	20,457,596
3rd	85,817,067	38,710,644	22,276,002
4th	105,968,347	51,277,504	10,935,635
Year	333,625,086	130,396,012	71,663,615
	1913.	1912.	1911.
1st	\$34,426,802	\$17,826,973	\$23,519,203
2nd	41,219,813	25,102,266	28,108,620
3rd	38,450,400	30,063,512	29,522,725
4th	23,084,330	35,181,922	23,155,018
Year ...	137,181,345	108,174,673	104,305,466

Unfilled Orders.

(At end of the Quarter.)

	First.	Second.	Third.	Fourth.
1904..	4,136,961	3,192,277	3,027,436	4,696,203
1905..	5,579,560	4,829,655	5,865,377	7,605,086
1906..	7,018,712	6,809,584	7,936,884	4,489,718
1907..	8,043,858	7,603,878	6,425,008	4,642,553
1908..	3,765,343	3,313,876	3,421,977	3,603,527
1909..	3,542,590	4,057,939	4,796,833	5,927,031
1910..	5,402,514	4,237,794	3,158,106	2,674,757
1911..	3,447,301	3,361,058	3,611,317	5,084,761
1912..	5,304,841	5,807,346	6,551,507	7,932,164
1913..	7,468,956	5,807,317	5,003,785	4,282,108
1914..	4,653,825	4,032,857	3,787,667	3,836,643
1915..	4,255,749	4,678,196	5,317,808	7,805,220
1916..	9,331,001	9,640,458	9,522,584	11,547,286

Bookings and Shipments.

In this table, first two columns, percentages of bookings and shipments to total capacity, our own estimates, while last column is derived from official reports of "unfilled tonnage" while third percentage column is directly computed from this tonnage column.

	Ship-ments.	Book-ings.	Dif-ference.	Dif-ference.
	%	%	%	Tons.
1915—				
January ..	44	81	+37	+411,928
February ..	57	66	+ 9	+ 96,800
March	67	60	- 7	- 89,622
April	71	63	- 8	- 93,505
May	76	85	+ 9	+102,354
June	79	113	+34	+413,598
July	83	104	+21	+250,344
August	91	89	- 2	- 20,085
September .	98	133	+35	+409,163
October ...	103	172	+69	+847,834
November .	102	186	+84	+1,024,037
December .	102	152	+50	+615,731
1916—				
January ...	102	112	+10	+116,547
February ..	102	157	+55	+646,199
March	104	164	+60	+762,035
April	104	146	+42	+498,550
May	104	82	-22	-297,340
June	104	82	-22	-297,340
July	90	86	- 4	- 46,866
September .	96	87	- 9	-137,773
October ...	106	145	+39	+492,676
November .	104	189	+85	+1,043,282
December .	96	136	+40	+488,744
1917				
January ...	92	86	- 9	- 78,892
Total unfilled obligations, January 31, 1917,	11,474,054 tons.			

increases and in that direction chiefly lies such relief as can reasonably be expected.

Steel Bookings.

A large tonnage of business went on to books of steel mills in February, possibly as large a tonnage as was shipped. There was no spectacular buying, no array of important new projects for which steel was bought. Rather the business was in the form of mills booking their regular customers for additional periods, merely giving them the regular form of contract protection. Thus the automobile and agricultural implement makers covered quite large in steel bars for second half, and they are ready to complete their sheet buying when the sheet mills are willing to enter the tonnage.

Locomotive buying in February was

fair while car buying was rather light, though impressive considering the very high prices.

Influence of War.

It is surmised that some important steel orders have been placed by the government in connection with preparations for war, but secrecy surrounds whatever has been done. Precedence will be given to all government orders to the extent desired by the government and this will be at the expense of domestic business rather than by delay in filling export orders, as there would be no efficiency in conducting a war in that manner. Irrespective of the case of American vessels, the Entente Allies, which have been taking the great bulk of our iron and steel exports, will provide vessels for the material as long as there are any.

United States Pig Iron Production.

Official Statistics for 1916—Gross Tons.

	Number of Stacks.				Production		
	In June 30 1916.	In Dec. 31, 1916.	Out.	Total.	First half.	Second half.	Year.
Massachusetts	1	1	1	2			
Connecticut	0	1	2	3	4,700	1,019	5,719
New York	20	18	9	27			
New Jersey	1	1	4	5	1,214,037	1,138,498	2,352,535
Pennsylvania	132	127	30	157	8,286,076	8,220,208	16,506,284
Maryland	4	4	1	5	243,895	257,557	501,452
Virginia	9	9	13	22	202,777	197,108	399,885
Georgia	0	0	4	4			
Texas	0	0	2	2			
Alabama	31	29	18	47	1,366,728	1,396,157	2,762,885
West Virginia	4	4	0	4			
Kentucky	4	4	2	6			
Mississippi	0	0	1	1	268,859	285,731	554,590
Tennessee	12	11	7	18	162,009	193,365	355,374
Ohio	67	65	12	77	4,250,790	4,352,105	8,602,895
Illinois	23	24	0	24	1,938,152	1,984,360	3,922,512
Indiana	10	10	0	10			
Michigan	12	12	2	14	1,073,768	1,147,940	2,221,708
Wisconsin	6	5	3	8			
Minnesota	3	3	0	3	417,542	393,783	811,325
Missouri	1	2	0	2			
Iowa	0	0	0	0			
Colorado	4	3	3	6			
Oregon	0	0	1	1			
Washington	0	0	0	0			
California	0	0	0	0	190,189	247,444	437,633
Total	344	333	115	448	19,619,522	19,815,215	39,434,797

Production by Grades, Half Years.

	First half.	Second half.	Change.
Bessemer and low phosphorus	6,839,177	7,583,280	+11.0%
Basic	8,830,085	8,854,002	+ .2%
Foundry	3,086,410	3,167,234	+2.6%
Malleable	460,839	460,647	— 0.0%
Forge	169,306	179,038	+ 5.8%
Spiegel and ferro-manganese	189,046	226,488	+19.9%
All other	44,659	44,586	— .2%
Total	19,619,522	19,815,275	+ 1.0%

Physical Condition on Delivery.

	1915.	1916.
Molten	17,108,891	23,101,018
Sand cast	5,076,469	6,584,152
Machine cast	6,969,108	8,278,357
Chill cast	740,413	1,442,576
Direct castings	21,032	28,694
Total	29,916,213	39,434,797

Physical Condition, Bessemer and Basic.

	1915.		1916.	
	Cast.	Molten.	Cast.	Molten.
Bessemer	3,064,484	7,458,822	4,588,594	9,833,863
Basic	3,444,445	9,648,769	4,435,577	13,248,516

Merchant and Steel Works Production.

	For sale.	For maker's use.	Total.
Basic	2,476,677	15,207,410	17,684,087
Bessemer and low phosphorus	1,976,863	12,445,594	14,422,457
Foundry, including ferro-iron	5,473,196	80,448	5,553,644
Malleable	921,486	0	921,486
Forge or mill	144,615	203,729	348,344
Ferro-manganese	63,166	158,366	221,532
Spiegel-iron	143,733	50,249	194,002
All other grades	53,561	35,684	89,245
Total	11,273,347	28,181,480	39,454,797

Charcoal Iron.

Kinds of iron.	1912.	1913.	1914.	1915.	1916.
Cold blast	8,864	10,222	9,294	5,302	5,323
Hot and warm blast*	338,161	329,759	254,630	290,850	367,988
Total, gross tons	347,025	340,081	263,924	296,152	373,311

* Includes iron made with charcoal and electricity from 1912 to 1915, inc.

Comparison of Security Prices.

	Range for 1915		Range for 1916		Range for 1917		Closing, Feb. 23,
	High.	Low.	High	Low.	High.	Low.	1917.
Iron and Industrial Stocks.							
Allis-Chalmers Mfg.	49½	7¾	38	19	29	20½	24½
Allis-Chalmers Mfg. pfd.	85½	33	92	70½	85½	79¼	82
American Can	68½	25	68½	44	51½	36	42¼
American Can pfd.	113½	89	115½	107½	110½	107	110
American Car & Fdy.	98	40	78½	52	69½	57	64
American Locomotive	73¾	19	98¼	58	82¾	62½	69
American Smelt'g & Refining	108½	56	123¾	88½	110¼	93½	95½
American Steel Foundries	74½	24½	73	44	63	52	59½
American Zinc, Lead & Smelt'g	71	67¾	97½	29¾	41¾	31½	36½
Anaconda Copper	91½	49½	105¾	77	86¾	70	79½
Baldwin Locomotive	154½	26½	118½	52	62	43	52¼
Bethlehem Steel	600	46¼	700	415	515	119	120¾
Bethlehem Steel pfd.	184	91	168	126	135	123	123
Chino Copper	57½	32¾	74	46½	57½	48½	55
Colo. Fuel & Iron Co.	66½	21¾	63¾	38½	49¼	38½	45½
Crucible Steel	109½	18¼	99½	50¼	69¼	50½	64¼
Crucible Steel pfd.	112½	84	124½	108¼	117¾	107	112½
Driggs-Seabury .....	...	...	119¾	45½	60	39½	52½
General Electric	185½	138	187¼	159	171¾	161	161½
Granby Consolidated	91	79¼	120	80	92¾	75½	87¾
Great Northern Ore. Prop. ..	54	25¼	50¾	32	38	27¾	32
Gulf States Steel .....	...	...	193	71	137	99½	106
International Harv. of N. J.	114	90	126½	108½	123	112¼	117
Inter. Harv. of N. J., pfd.	120	100	122	114	121	118	121
International Harv. Corp.	85	55	90¼	68½	88	75½	79
Inter. Harv. Corp. pfd.	114	90½	114¾	104½	114	110¼	111
Lackawanna Steel	94¾	28	107	64	89¼	70½	77
National Enam. & Stamp. ...	36½	9½	36½	19¾	34½	24	32
National Enam. & Stamp. pfd.	97	79	100½	90½	98	95½	96
National Lead	70¾	44	74½	57	61½	52	56
National Lead pfd.	115	104¾	117½	111¼	114	111¾	112½
New York Air Brake	164¾	56½	186	118	155	128	146
Pressed Steel Car	78¼	25	88¼	42½	83¼	72½	75¼
Pressed Steel Car pfd.	106	86	108	98½	106	100¾	104
Railway Steel Spring	54	19	61¾	32	53¾	43	49
Railway Steel Spring pfd. ..	102	86½	104¾	95¼	101	100	100
Ray Consolidated Copper	27½	15¼	37	20	28½	23	26½
Republic Iron & Steel	57¼	19	93	42	83½	60	76
Republic Iron & Steel pfd. ..	112½	72	117	101	105¾	99	102
Sloss-Sheffield	66½	22	93¼	37	71	50	60
Sloss-Sheffield pfd.	102	85	103½	91½	99	94	99
Texas Company	237	120	241½	177¼	243	200	221½
U. S. Cast Iron Pipe	31½	8	28½	16¾	23½	17	19¼
U. S. Cast Iron Pipe pfd.	55½	32½	67½	48½	62¾	54	60
U. S. Smelting & Refining ..	...	...	81½	57	67¾	52¾	56½
U. S. Smelting & Refining pfd.	...	...	53½	50	52¼	50½	51
U. S. Steel Corporation	89½	38	129¾	79¾	115½	99	108
U. S. Steel Corporation pfd.	117	102	123	115	121¼	116¾	117½
Utah Copper	81¾	48½	130	74¾	112½	97	109½
Virginia Iron, Coal & Coke ..	74	36	73¼	41	59	46	54
Westinghouse Elec. & Mfg. ..	74½	32	71½	51¼	55½	46	47½

Comparison of Metal Prices.

	Range for 1915		Range for 1916		Range for 1917		Closing, Feb. 28,
	High.	Low.	High.	Low.	High.	Low.	1917.
Pig Iron							
Massena, valley	21.00	13.50	35.00	20.00	35.00	35.00	35.00
Basin, valley	18.00	12.50	30.00	17.75	30.00	30.00	30.00
No. 2 foundry, valley	18.50	12.50	30.00	18.25	30.00	30.00	30.00
No. 2 N. Ely, Philadelphia ..	19.50	14.00	30.75	19.50	30.75	30.75	30.75
No. 2 foundry, Cleveland ..	18.50	13.00	30.95	18.50	34.00	30.95	34.00
No. 2 foundry, Buffalo	18.00	11.75	35.00	18.00	35.00	35.00	35.00
No. 2 foundry, Chicago ..	18.50	13.00	30.00	18.00	34.00	30.00	34.00
No. 2 South'n Birmingham	14.50	9.25	25.00	14.00	27.00	24.00	27.00
Scrap Iron and Steel.							
Making steel, Pittsburgh ..	18.00	11.00	27.00	16.00	25.00	22.00	22.50
Heavy steel scrap, Phila. ..	16.25	9.50	24.50	14.75	24.50	20.50	20.75
Heavy melt. steel, Chicago ..	15.25	8.75	24.00	14.50	24.50	21.50	21.75
No. 1 R. R. wrought, Pitts. ..	17.25	10.75	29.00	17.50	23.00	19.50	19.75
No. 1 cast, Pittsburgh	15.00	11.00	23.50	14.75	22.50	19.75	19.75
Iron and Steel Products.							
Round rods, mill	28.00	28.00	38.00	28.00	38.00	38.00	38.00
Round bars, Pittsburgh	1.00	1.20	3.25	1.90	3.25	3.25	3.25
Round bars, Philadelphia ...	2.06	1.12½	3.16	2.06	3.16	3.16	3.16
Steel bars, Pittsburgh	1.80	1.10	3.00	1.85	3.00	3.00	3.00
Tank plates, Pittsburgh ..	1.60	1.10	3.60	1.85	3.75	3.50	3.75
Structural shapes, Pitts. ..	1.80	1.10	3.10	1.85	3.25	3.10	3.25
Graded steel skep, Pitts. ..	1.75	1.12½	2.85	1.75	2.85	2.85	2.85
Black sheets, Pittsburgh ..	2.60	1.70	4.50	2.60	4.75	4.50	4.50
Galv. sheets, Pittsburgh ...	5.00	2.65	6.50	4.15	7.00	6.25	6.50
Tank plates, Pittsburgh	3.60	3.10	7.50	3.75	8.00	7.00	8.00
Wire rods, Pittsburgh	2.10	1.50	3.00	2.10	3.00	3.00	3.00
Steel pipe, Pittsburgh	70%	81%	64%	78%	64%	62%	62%
Connellsville Coke at ovens.							
Phosph. furnace	3.50	1.50	12.00	2.50	13.00	8.00	11.50
Phosph. foundry	3.75	2.00	12.00	3.25	15.00	10.00	13.75
Metals—New York.							
Standard tin	57.00	32.00	56.00	37.50	55.00	42.50	51.00
Lake copper	33.00	13.00	35.00	23.00	36.00	28.00	33.50
Electrolytic copper	33.00	12.80	36.00	23.00	37.00	27.75	36.50
Cast copper	32.00	12.70	34.00	22.00	34.00	26.50	33.50
Sheet copper	37.25	18.75	42.00	28.00	44.00	42.00	44.00
Lead (Trenton price)	7.00	3.70	7.50	5.50	8.50	7.50	8.50
Spelter	37.25	5.70	31.17½	8.37½	11.05	9.17½	10.80
Thames & Jap. antimony ..	40.00	13.00	45.00	10.50	35.00	14.25	32.00
Manchester, as made	60.00	18.75	67.00	33.00	64.00	56.00	56.00
London	70½	46½	77½	55½	79	74½	77
St. Louis.							
Lead	7.50	3.50	8.25	5.45	10.00	7.30	9.75
Spelter	27.00	5.55	31.00	8.20	10.87½	9.00	10.62½
Standard tin	57.00	9.00	55.50	15.00	21.00	21.00	21.00
London							
Standard tin, premiums	100	148½	205	161½	202½	180½	202½
Standard copper, premiums ..	86½	77½	153	84	146	130	139
Lead	90½	18½	96½	27½	30½	30½	30½
Spelter	110	28½	110	43	50	45½	47
Silver	27½d	22½d	34d	26½d	38d	36	37½d

Railroad Earnings.

Railroad earnings per mile of road, of roads having annual operating revenues above \$1,000,000, this being about 230,000 miles or about 90% of the total steam railway mileage; compiled by the Bureau of Railway Economics from reports furnished the Interstate Commerce Commission.

	1913-14			1914-15			1915-16		
	Revenue.	Expenses.	Net.	Revenue.	Expenses.	Net.	Revenue.	Expenses.	Net.
July	\$1,183	\$837	\$346	\$1,127	\$786	\$341	\$1,130	\$750	\$380
August ..	1,244	856	388	1,174	788	386	1,190	764	426
September	1,257	854	403	1,185	783	402	1,251	774	477
October ..	1,314	891	423	1,171	787	384	1,323	815	508
November	1,180	884	337	1,026	734	292	1,303	801	502
December	1,116	821	296	993	730	263	1,253	802	451
January ..	1,021	795	226	939	718	221	1,133	797	336
February ..	914	746	168	900	680	220	1,140	800	340
March ...	1,091	801	290	1,015	722	293	1,260	844	416
April	1,038	782	256	1,013	724	289	1,223	827	396
May	1,047	800	247	1,044	735	309	1,307	857	450
June	1,097	789	308	1,094	732	362	1,302	851	451
Fiscal year	13,483	9,801	3,682	12,678	8,915	3,763	14,818	9,684	5,134

	1916-17		
	Revenue.	Expenses.	Net.
July	\$1,315	\$848	\$467
August ..	1,418	882	536
September	1,409	881	528
October ..	1,466	910	556
November ..	1,396	894	502

Wage Scale Averages.

Sworn averages of prices obtained by mills for shipments in months named, used in fixing wages under Amalgamated Association sliding scales. The figures represent the rates used, the actual ascertained averages lying between the figure given and the one five points higher. Base sizes of iron bars; average of 26, 27 and 28 gauges black sheets; tin plate per base box, 100-pound.

Bar Iron.

	1914.	1915.	1916.
January-February.	1.1590	1.024	1.40
March-April	1.176	1.087	1.60
May-June	1.1257	1.10	1.85
July-August	1.0928	1.15	1.95
September-October	1.0847	1.15	2.00
November-December	1.037	1.30	2.15
Year's average	1.1125	1.144	1.83

Sheets and Tin Plates.

1916.	Sheets.	Tin Plates.
January-February	2.25	3.50
March-April	2.50	3.70
May-June	2.60	3.90
July-August	2.70	4.05
September-October	2.75	4.10
November-December ..	2.80	4.25
Year's average	2.60	3.92

Pig Iron Production.

Rates per annum, including charcoal pig.

August, 1915	31,800,000
September	35,000,000
October	37,100,000
November	37,350,000
December	38,000,000
January, 1916	37,850,000
February	39,200,000
March	39,600,000
April	39,600,000
May	39,800,000
June	39,500,000
July	38,350,000
August	39,200,000
September	39,300,000
October	41,700,000
November	40,700,000
December	37,700,000
January, 1917	37,450,000
On February 1st	37,600,000

Actual production:

1910	27,303,567
1913	30,966,152
1914	23,332,244
1915	29,916,213
1916	39,434,797

Composite Steel.

Computation for March 1, 1917:

Pounds.	Group.	Price.	Extension.
2½	Bars	3.00	7.500
1½	Plates	3.75	5.625
1½	Shapes	3.25	4.875
1½	Pipe (34.30)	3.75	5.625
1½	Wire nails	3.00	4.500
1	Sheets (28 bl.)	4.75	4.750
½	Tin plates	8.00	4.000
10 pounds			36.875
One pound		3.6875	

Averaged from daily quotations:

	1913.	1914.	1915.	1916.	1917.
Jan.	1.7737	1.5394	1.4554	2.1410	3.553
Feb.	1.7625	1.5794	1.4716	2.2988	3.653
Mar.	1.7646	1.5638	1.5098	2.5579	
April	1.7742	1.5337	1.5357	2.7165	
May	1.7786	1.5078	1.5381	2.8043	
June	1.7719	1.4750	1.5312	2.8300	
July	1.7600	1.4805	1.5692	2.8425	
Aug.	1.7400	1.5241	1.6059	2.8588	
Sept.	1.7093	1.5632	1.6506	2.9013	
Oct.	1.6779	1.5236	1.7264	2.9747	
Nov.	1.6203	1.4769	1.9089	3.2036	
Dec.	1.558	1.4324	2.0329	3.4679	
Year	1.7241	1.5182	1.6280	2.8009	

Scrap Iron and Steel Prices.

Melting Steel. Bundled No. 1 R. R. No. 1 No. 1 Heavy Steel. Sheet Wrought Cast. Steel. Mel'g. Pitts. Pitts. Pitts. Pitts. Phila. Ch'go.

1915—					
June	11.75	9.37	10.75	11.85	11.25 9.75
July	12.62	9.60	11.00	12.00	11.85 10.90
Aug.	14.05	11.40	12.25	12.85	13.70 11.85
Sep.	14.25	11.90	13.15	13.10	14.70 12.15
Oct.	14.50	12.00	13.75	13.35	14.50 12.00
Nov.	16.12	12.55	15.35	13.90	14.65 13.95
Dec.	17.65	13.15	17.10	14.95	15.60 15.25
Year	13.25	10.54	12.26	12.40	12.54 10.90

1916—					
Jan.	17.75	13.40	18.00	15.10	16.30 15.60
Feb.	17.20	13.60	18.75	15.35	16.25 15.75
Mar.	18.40	14.80	19.15	15.75	17.15 16.75
Apr.	18.00	14.75	19.25	16.00	18.00 16.75
May	17.00	13.65	19.65	16.10	17.00 15.90
June	16.25	13.00	19.00	15.40	15.45 14.80
July	16.70	12.50	18.80	15.30	15.00 14.30
Aug.	16.25	11.70	18.15	15.00	15.00 15.30
Sep.	16.61	11.65	18.35	15.00	15.00 16.00
Oct.	18.25	11.65	19.30	15.80	15.85 17.35
Nov.	22.50	13.75	21.25	17.75	18.25 21.00
Dec.	25.50	16.00	27.20	21.40	23.95 23.65
Year	18.37	13.38	19.73	16.16	16.92 16.90

1917—					
Jan.	23.50	16.25	23.75	20.75	22.75 23.50
Feb.	22.50	15.75	22.50	19.75	21.15 22.25

Composite Pig Iron.

Computation for March 1, 1917:

One ton Bessemer, valley	\$35.00
Two tons basic, valley (30.00)	60.00
One ton No. 2 foundry, valley	30.00
One ton, No. 2 foundry, Philadelphia	32.75
One ton No. 2 foundry, Buffalo	35.25
One ton No. 2 foundry, Cleveland	34.00
One ton No. 2 foundry, Chicago	32.50
Two tons No. 2 Southern, Foundry Cincinnati (27.90)	55.80
Total, ten tons	315.30
One ton	31.530

Averaged from daily quotations:

	1913.	1914.	1915.	1916.	1917.
Jan.	17.391	13.492	13.070	18.690	30.752
Feb.	17.140	13.721	13.079	18.564	30.946
Mar.	16.775	13.843	12.971	18.857	
April	16.363	13.850	12.914	19.021	
May	15.682	13.808	13.206	18.965	
June	14.968	13.606	13.047	18.552	
July	14.578	13.520	13.125	18.585	
Aug.	14.565	13.516	14.082	18.514	
Sept.	14.692	13.503	14.895	18.697	
Oct.	14.737	13.267	15.213	20.192	
Nov.	14.282	13.047	16.398	25.243	
Dec.	13.838	13.073	17.987	30.082	
Year	15.418	13.520	14.150	20.306	

Unfinished Steel and Iron Bars.

(Averaged from daily quotations.)

	Billets. Pitts.	Sheet Bars. Pitts.	Rods. Pitts.	—Iron bars, deliv. — Phila. Pitts.	Ch'go.
1915—					
Sep.	26.50†	26.00†	29.75	1.49	1.35 1.30
Oct.	26.00†	26.00†	31.50	1.57	1.45 1.38
Nov.	26.20†	26.50†	36.00	1.72	1.54 1.51
Dec.	30.73†	30.73†	39.50	1.99	1.83 1.69
Year	13.26	10.54	12.26	12.40	12.54 10.90
1916—					
Jan.	32.50†	32.50†	42.00	2.24	2.02 1.79
Feb.	34.00†	34.00†	48.00	2.41	2.25 1.92
Mar.	41.00†	41.00†	56.00	2.56	2.40 2.17
Apr.	45.00	45.00	60.00	2.62	2.50 2.35
May	43.00	43.00	59.00	2.66	2.60 2.35
June	42.00†	42.00†	58.00	2.66	2.60 2.35
July	42.50†	42.50†	58.00	2.66	2.60 2.35
Aug.	46.00	46.00	58.00	2.66	2.60 2.35
Sep.	47.00	45.00	58.00	2.66	2.70 2.35
Oct.	48.00	48.00	59.00	2.66	2.75 2.35
Nov.	52.75	54.00	65.00	2.66	2.85 2.50
Dec.	56.96	56.96	70.00	3.02	3.19 2.89
Year	44.23	44.17	57.58	2.57	2.59 2.31
1917—					
Jan.	63.50	63.50	75.00	3.16	3.25 3.00
Feb.	65.00	65.00	77.00	3.16	3.25 3.00

† Premium for open-hearth.

Price Changes of Iron and Steel Products From November 4, 1915 to Date.

Price changes in merchant bars, structural shapes, plates, wire nails, merchant pipe, sheets and tin plates are given below, with dates. These are the commodities used in compiling our composite finished steel. In some cases the dates named are those upon which prominent producers announced price changes, but more frequently the rates are merely those upon which our quotations were changed. A few other price changes are included.

1915—				1916—			
Nov.	4	Black sheets	2.10 to 2.20	Feb.	15	Pipe	76% to 75%
"	4	Galvanized sheets	3.60 to 3.70	"	21	Bars	2.00 to 2.25
"	4	Bars	1.50 to 1.60	"	21	Plates	2.10 to 2.35
"	12	Tin plate	3.30 to 3.60	"	21	Shapes	2.00 to 2.25
"	12	Sheets	2.20 to 2.25	"	21	Tin plate	3.75 to 4.00
"	15	Sheets	2.25 to 2.40	"	29	Pipe	75% to 74%
"	15	Galvanized sheets	3.80 to 4.00	"	29	Boiler tubes	64% to 63%
"	15	Blue ann. sheets	1.80 to 2.00	Mar.	1	Wire nails	2.30 to 2.40
"	16	Wire nails	1.85 to 1.90	"	8	Black sheets	2.60 to 2.75
"	18	Bars	1.60 to 1.70	"	8	Blue ann. sheets	2.65 to 2.90
"	18	Plates	1.60 to 1.70	"	13	Bars	2.25 to 2.35
"	18	Shapes	1.60 to 1.70	"	13	Plates	2.35 to 2.60
"	18	Galvanized sheets	4.00 to 4.25	"	13	Shapes	2.25 to 2.35
"	24	Galvanized sheets	4.25 to 4.50	"	15	Steel pipe	74% to 73%
"	30	Sheets	2.40 to 2.50	"	15	Boiler tubes	63% to 61%
"	30	Galvanized sheets	4.50 to 4.75	"	23	Bars	2.35 to 2.50
"	30	Blue ann. sheets	2.00 to 2.25	"	23	Shapes	2.35 to 2.50
Dec.	1	Wire nails	1.90 to 2.00	"	28	Plates	2.60 to 2.75
"	1	Boiler tubes	69% to 68%	"	29	Sheets	2.75 to 2.85
"	15	Bars	1.70 to 1.80	"	29	Steel pipe	73% to 72%
"	15	Plates	1.70 to 1.80	"	29	Boiler tubes	61% to 60%
"	15	Shapes	1.70 to 1.80	April	5	Sheets	2.85 to 2.90
"	21	Wire nails	2.00 to 2.10	"	15	Boiler tubes	60% to 56%
"	22	Sheets	2.50 to 2.60	"	19	Tin plate	4.50 to 5.00
1916—				"	24	Pipe	72% to 70%
Jan.	3	Tin plate	3.60 to 3.75	May	1	Wire nails	2.40 to 2.50
"	3	Blue ann. sheets	2.25 to 2.35	"	3	Tin plates	5.00 to 5.50
"	4	Bars	1.80 to 1.85	"	16	Plates	2.75 to 2.90
"	4	Plates	1.80 to 1.85	June	7	Galv. sheets	5.00 to 4.75
"	4	Shapes	1.80 to 1.85	"	16	Tin plate	5.50 to 6.00
"	4	Pipe (with extra		July	7	Blue ann. sheets	3.00 to 2.90
		2.00)	78% to 77%	"	7	Galv. sheets	4.75 to 4.50
"	5	Blue ann. sheets	2.35 to 2.40	Aug.	1	Tin plate	6.00 to 5.50
"	7	Boiler tubes	68% to 66%	"	7	Wire nails	2.50 to 2.60
"	12	Blue ann. sheets	2.40 to 2.50	"	15	Bars	2.50 to 2.60
"	14	Boiler tubes	66% to 64%	"	18	Shapes	2.50 to 2.60
"	19	Blue ann. sheets	2.50 to 2.65	"	18	Plates	2.90 to 3.00
"	21	Bars	1.85 to 1.90	"	25	Galv. sheets	4.25 to 4.15
"	21	Plates	1.85 to 2.00	Sept.	7	Pipe	70% to 69%
"	21	Shapes	1.85 to 1.90	"	7	Boiler tubes	56% to 54%
"	21	Pipe	77% to 76%	Sept.	20	Galv. sheets	4.15 to 4.25
"	24	Wire nails	2.10 to 2.20	"	28	Sheets	2.90 to 3.00
Feb.	7	Bars	1.90 to 2.00	Oct.	3	Blue ann. sheets	2.90 to 3.00
"	7	Plates	2.00 to 2.10	"	3	Galv. sheets	4.25 to 4.30
"	7	Shapes	1.90 to 2.00	"	6	Sheets	3.00 to 3.10
"	14	Wire nails	2.20 to 2.30	"	7	Tin plate	5.50 to 6.00

Oct. 13	Sheets	3.10	to 3.25
" 13	Galv. sheets	4.30	to 4.40
" 13	Tin plate	6.00	to 5.75
" 16	Galv. sheets	4.40	to 4.50
" 19	Wire nails	2.60	to 2.70
" 20	Sheets	3.25	to 3.35
" 20	Blue ann. sheets	3.00	to 3.15
" 24	Plates	3.00	to 3.25
" 25	Bars	2.60	to 2.70
" 25	Shapes	2.60	to 2.70
" 25	Grooved skelp	2.35	to 2.50
" 26	Sheets	3.35	to 3.40
" 26	Galv. sheets	4.50	to 4.75
" 27	Blue ann. sheets	3.15	to 3.30
" 30	Tin plate	5.75	to 6.00
" 31	Shapes	2.70	to 2.80
Nov. 1	Boiler tubes	54%	to 52%
" 6	Wire nails	2.70	to 2.85
" 8	Sheets	3.40	to 3.65
" 15	Tin plate	6.00	to 6.25
" 15	Grooved skelp	2.50	to 2.60
" 15	Pipe	69%	to 68%
" 18	Galv. sheets	5.00	to 5.50
" 20	Tin plate	6.25	to 7.00
" 20	Sheets	3.65	to 4.00
" 21	Bars	2.70	to 2.90
" 21	Plates	3.25	to 3.50
" 21	Shapes	2.80	to 3.00
" 21	Blue ann. sheets	3.30	to 3.40
" 21	Boiler tubes	52%	to 46%
" 25	Grooved skelp	2.60	to 2.85
" 27	Blue ann. sheets	3.40	to 3.50
" 27	Galv. sheets	5.50	to 5.75
" 27	Wire nails	2.85	to 3.00
Dec. 4	Pipe	68%	to 66%
" 4	Sheets	4.00	to 4.25
" 5	Galv. sheets	5.75	to 6.00
" 6	Blue ann. sheets	3.50	to 3.65
" 11	Sheets	4.25	to 4.50
" 11	Galv. sheets	6.00	to 6.25
" 20	Tin plate	7.00	to 7.50
" 21	Bars	2.90	to 3.00
" 21	Shapes	3.00	to 3.10
" 21	Plates	3.50	to 3.60
" 26	Blue ann. sheets	3.75	to 4.00
" 30	Pipe	66%	to 64%
1917—			
Jan. 10	Galv. sheets	6.25	to 6.50
" 10	Blue ann. sheets	4.00	to 4.25
" 16	Tin plate	7.00	to 7.50
" 30	Shapes	3.10	to 3.25
" 30	Plates	3.60	to 3.75
Feb. 6	Tin plate	7.00	to 8.00
" 14	Pipe	64%	to 62%
" 15	Sheets	4.50	to 4.75
" 16	Blue ann. sheets	4.25	to 4.50
Mar. 5	Pipe	62%	to 60%
" 5	Wire nails	3.00	to 3.20

Steel Making Pig Iron Averages.

Bessemer and basic pig iron averages, compiled by Messrs. W. P. Snyder & Company from sales in the valley market of 1,000 tons and over.

	Bessemer.		Basic.	
	1916.	1917.	1916.	1917.
Jan. ..	\$20.645	\$35.00	\$17.833	\$30.00
Feb. ..	20.2136	35.418	17.984	30.00
Mar. ..	20.8625		18.25	
April ..	20.70		18.00	
May ..	20.833		18.1607	
June ..	21.00		18.00	
July ..	21.00		18.00	
Aug. ..	21.00		18.00	
Sept. ..	21.9346		18.63	
Oct. ...	23.6576		20.3086	
Nov. ..	29.12		27.229	
Dec. ..	34.213		30.00	
Year ..	22.9316		20.0329	

Above prices are f. o. b. valley furnace; delivered Pittsburgh is 95 cents higher.

British Iron And Steel Exports.

	Pig Iron.	Rails.	Tin Plate.	Total.*
1912 ..	1,262,383	407,175	481,123	4,933,112
1913 ..	1,124,181	500,117	494,497	5,049,090
1914 ..	780,763	433,507	435,392	3,972,348
1915 ..	611,227	242,267	368,778	3,248,046
1915—				
Sept. ..	53,068	15,800	20,002	249,501
Oct. ..	78,973	13,640	31,968	312,141
Nov. ..	86,109	12,760	25,556	308,319
Dec. ..	74,892	9,937	30,641	259,782
Year ..	611,227	242,267	368,778	3,248,046
1916—				
Jan. ..	78,271	3,151	26,271	292,203
Feb. ..	84,351	3,905	27,289	283,250
Mar. ..	87,283	3,366	29,400	307,488
April ..	82,976	10,510	23,337	293,897
May ..	97,967	4,103	41,868	395,750
June ...	77,487	3,243	30,351	310,595
July ...	69,999	3,485	38,174	298,929
Aug. ..	95,655	1,983	34,124	319,928
Sept. ..	72,683	2,712	19,226	231,335
Oct. ..	72,187	6,929	10,929	241,261
Nov. ..	49,986	16,411	4,571	224,554
Dec. ..	48,542	2,317	14,248	158,609
Year ..	917,396	50,275	321,710	3,357,829
1917—				
Jan. ..	61,201	5,935	16,515	210,124

* Includes scrap, pig iron, rolled iron and steel, cast and wrought iron manufactures, bolts, nuts, etc., but not finished machinery, boilers, tools, etc.

Iron and Steel Imports and Exports.

Value of Tonnage and Non-Tonnage.

	1911.	1912.	1913.	1914.	1915.	1916.
January	\$18,738,391	\$18,451,914	\$25,141,409	\$16,706,836	\$18,053,421	\$31,643,807
February	18,690,792	21,801,570	24,089,871	16,550,260	16,470,751	54,155,386
March	22,591,991	24,474,799	27,221,210	20,551,137	20,985,505	58,300,297
April	24,916,912	26,789,853	27,123,044	20,639,569	25,302,649	58,722,411
May	20,616,795	28,050,247	26,718,970	19,734,045	26,536,612	72,918,913
June	20,310,053	24,795,802	25,228,346	18,927,958	31,730,132	76,257,884
July	17,454,772	24,917,952	24,170,704	16,737,552	35,892,106	70,745,162
August	20,013,557	25,450,107	23,947,440	10,428,817	37,726,657	86,296,703
September ...	19,875,308	23,286,040	22,831,082	12,531,102	38,522,175	90,895,592
October	20,220,833	25,271,559	25,193,887	16,455,832	43,299,457	82,010,972
November ...	20,823,061	26,406,425	20,142,141	15,689,401	48,056,220	77,570,840
December ...	22,186,996	23,750,864	22,115,701	14,939,613	45,825,147	88,556,958
Totals ...	\$249,656,411	\$289,128,420	\$293,934,160	\$199,861,684	\$388,400,832	\$867,923,044

Exports of Tonnage Lines,---Gross Tons.

	1909.	1910.	1911.	1912.	1913.	1914.	1915.	1916.
January	70,109	118,681.	152,262	151,575	249,493	118,770	140,550	357,125
February	84,837	110,224	150,919	204,969	241,888	121,206	139,946	368,867
March	94,519	124,980	216,360	218,219	257,519	159,998	174,104	438,058
April	100,911	117,921	228,149	267,313	259,689	161,952	223,587	384,924
May	109,808	135,306	178,589	307,656	242,353	139,107	263,113	540,549
June	114,724	120,601	174,247	273,188	243,108	144,539	356,431	526,772
July	100,850	127,578	162,855	272,778	237,159	114,790	380,336	503,685
August	105,690	131,391	177,902	282,645	209,856	86,599	405,952	597,750
September	97,641	119,155	181,150	248,613	213,057	96,476	382,118	643,767
October	110,821	129,828	186,457	251,411	220,550	147,293	349,848	610,125
November	116,105	155,138	187,554	233,342	175,961	140,731	362,766	554,859
December	137,806	150,102	190,854	235,959	181,715	117,827	353,856	580,961
Totals	1,243,567	1,540,895	2,187,724	2,947,596	2,745,635	1,549,554	3,532,606	6,110,790

Iron Ore Imports.

	1913.	1914.	1915.	1916.
Jan. ..	175,463	101,804	75,286	89,844
Feb. ..	188,734	112,574	78,773	93,315
Mar. ..	164,865	68,549	88,402	93,383
April. .	174,162	111,812	91,561	75,712
May ..	191,860	125,659	98,974	148,599
June ..	241,069	188,647	118,575	134,154
July ..	272,017	141,838	119,468	156,755
Aug. ..	213,139	134,913	126,806	127,094
Sept. .	295,424	109,176	173,253	109,747
Oct. ..	274,418	114,341	138,318	95,833
Nov. .	179,727	90,222	113,544	82,257
Dec. .	223,892	51,053	118,321	118,043
Totals	2,594,770	1,350,588	1,341,281	1,325,736

Iron and Steel Imports.

	1912.	1913.	1914.	1915.	1916.
Jan. .	20,008	21,740	17,776	10,568	15,824
Feb. .	11,622	25,505	14,757	7,506	20,280
Mar. .	15,466	27,467	27,829	8,025	15,162
April. .	12,481	25,742	30,585	16,565	20,175
May ..	15,949	28,728	28,173	28,916	32,113
June ..	21,407	36,597	32,076	32,200	26,886
July ..	17,882	36,894	25,282	20,858	14,774
Aug. .	20,571	18,740	28,768	27,557	32,257
Sept. .	18,740	19,941	38,420	23,344	25,558
Oct. .	25,559	20,840	22,754	34,319	30,170
Nov. .	24,154	25,809	24,165	36,931	42,544
Dec. .	21,231	26,454	9,493	35,409	44,133
Total	225,072	317,260	289,778	282,443	275,743

Immigration Statistics.

Years mentioned refer to fiscal years ended June 30th. Aliens admitted include immigrant and non-immigrant, aliens departed include emigrant and non-emigrant.

Excess Arrivals Over Departures.

	Aliens.	Citizens.	Total.
1913	815,303	*61,098	754,203
1914	769,276	*82,211	687,065
1915	50,070	67,167	117,237
1916	125,941	11,197	137,138

July, 1915 ...	11,082	3,912	14,994
August	*14,324	*804	*15,128
September ..	*1,965	866	*1,099
October	4,877	662	5,539
November ...	3,292	*802	2,490
December ...	*570	*891	*1,461
January, 1916	7,303	*1,212	6,091
February	19,420	*1,826	17,594
March	23,791	4,198	27,989
April	26,143	4,471	30,614
May	24,708	2,021	26,729
June	22,184	65	22,249

July	18,244	3,634	21,878
August	21,413	304	21,717
September ..	29,310	1,443	30,753
October	28,339	*2,012	26,327
November ...	24,241	*183	24,058
December ...	18,791	*252	18,539
Six months ...	140,338	2,934	143,272
January, 1917	19,563	*1,790	17,773
Seven months	159,901	1,144	161,045

January, 1917.

Immigrant aliens	24,745
Non-immigrants in	5,002
Total aliens in	29,747

Emigrant aliens out	4,285
Non-emigrant aliens out	5,899
Total aliens out	10,184

Citizens in	10,009
Citizens out	11,799
Excess citizens out	1,790

Change in population:

Aliens	19,563
Citizens	1,790
Net change	17,773

* Excess of departures.

Our Foreign Trade.

Value of merchandise imports and exports, and favorable trade balance, calendar years.

	Imports.	Exports.	Balance.
1905	1,179,144,550	1,626,990,795	447,846,245
1906	1,320,501,572	1,798,243,434	477,741,862
1907	1,423,169,820	1,923,426,265	500,256,385
1908	1,116,374,087	1,752,835,447	636,461,360
1909	1,475,520,724	1,728,198,645	252,677,921
1910	1,562,904,151	1,866,258,904	303,354,753
1911	1,532,359,160	2,092,526,746	560,167,586
1912	1,818,133,355	2,399,217,993	581,084,638
1913	1,792,596,480	2,484,018,292	691,421,812
1914	1,789,276,001	2,113,624,050	324,348,049
1915	1,778,596,695	3,554,670,847	1,776,074,152
1916	*2,391,654,335	*5,481,423,589	*3,089,769,254

1914—

Apr.	173,762,114	162,552,570	†11,209,544
May	164,281,515	161,732,619	†2,548,896
June	157,529,450	157,072,044	†457,406
July	150,677,291	154,138,947	†5,538,344
Aug.	129,767,890	110,367,494	†19,400,396
Sept.	139,710,611	156,052,333	16,341,722
Oct.	137,978,778	195,283,852	57,305,074
Nov.	126,467,062	205,878,333	79,411,271
Dec.	114,656,545	245,632,558	130,976,013

1915—

Jan.	122,148,317	267,879,313	145,730,996
Feb.	125,123,391	298,727,757	173,604,366
Mar.	158,022,016	296,501,852	138,479,836
Apr.	160,576,106	294,745,913	134,169,807
May	142,284,851	273,769,093	131,484,242
June	157,695,140	268,547,416	110,852,276
July	143,099,620	267,978,990	124,879,370
Aug.	141,830,202	261,025,230	119,195,028
Sept.	151,236,026	300,676,822	149,440,796
Oct.	149,172,729	336,452,009	186,979,289
Nov.	155,496,675	327,670,353	172,173,678
Dec.	171,832,505	359,306,492	187,473,987

1916—

Jan.	184,362,117	330,784,847	146,422,730
Feb.	193,935,117	402,991,118	209,056,001
Mar.	213,589,785	409,850,425	196,260,640
Apr.	217,705,397	399,861,157	182,155,760
May	229,188,957	474,881,255	245,692,298
June	*245,795,438	464,784,318	218,988,880
July	182,722,938	445,472,000	262,749,062
Aug.	199,247,391	509,778,680	310,531,289
Sept.	164,038,614	515,007,405	350,968,794
Oct.	178,658,730	492,813,918	314,155,188
Nov.	176,988,305	516,976,359	340,988,054
Dec.	204,834,188	521,650,904	316,816,716

1917—

Jan.	241,674,851	*613,441,020	*371,766,169
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* High record. † Balance unfavorable.

Copper in February.

February Ushers in the Highest Price for Spot Copper in 45 Years—Severance of Relations With Germany, Decreased Production and Railroad Congestion all Contributed Toward Strength of Market.

Sales of refined copper in February are estimated about 60,000,000 pounds, prices advancing from 3c to 4c per pound on various positions to the highest points touched in 45 years, Electrolytic copper sold as high as 37.00c per pound for spot. The foreign market, while sympathizing with prices here, did not advance proportionately, the London market being under Government control. American Electrolytic, however, advanced £7 on spot and future positions to £157 for spot and to £141 for futures. Spot Standard copper was advanced 5s to £139, and futures £6 to £136 10s.

At the beginning of February, the market was in a sensitive condition, and the severance of diplomatic relations between Germany and the United States, brought a new sustaining element into the market. The natural supposition was that eventually war with the Teutonic nations would follow and that consequently a heavy demand for copper would come from our own government as well as from the European belligerents, to be used in the manufacture of war munitions. In fact, the United States did come into the market with inquiries for 25,000,000 pounds of copper, as well as for spelter, and before the month closed it was rumored that the Anaconda Copper Company had accepted Government orders. If this is established as a fact, February copper transactions were at least 85,000,000 pounds.

Sales of Electrolytic copper were made during the first week of the month at 31.00c to 33.00c per pound for March and prompt shipments, respectively. Other positions ranged from 27.00c to 30.00c per pound; sales for April and May, shipment being made at 30.00c per pound. The London market during the same period advanced £2. In the second week, sales of 10,000,000 pounds were made at an advance of 1c to 2c per pound, spot sell-

ing at 34.50c to 35.00c and March at 34.00c; but business was mainly in March, April and May positions, March-April selling at 33.50c and April-May at 33.00c to 33.50c. There was some testing of the market for third and fourth quarters but there was no business transacted. American Electrolytic at London again advanced £2.

Market Strong and Advancing.

Considerable animation was evident during the third week, when transactions aggregated between 25,000,000 to 30,000,000 pounds. Most of the business was done for delivery before June but some sales were made for July and August and one lot sold for November-December shipment. Small lots of spot copper sold at 37.00c per pound, although the general market was not over 36.50c. February-March sold at 36.00c; April at 35.00c and May at 34.50c per pound. Toward the close of the third week, a few sales of July and August Electrolytic were reported between 31.00c and 32.00c and fourth quarter delivery between 30.00c and 31.00c per pound; but the latter sales were not well authenticated. Lake copper sold at 1c per pound under the asking prices of Electrolytic. At London, official prices of all positions of American Electrolytic and Standard were again advanced £2.

The industry assumed a waiting attitude during the fourth week of the month, consumers being very conservative and producers being equally inclined to be reserved. The few melters compelled to buy nearby deliveries, paid as high as 37.00c for spot and between 36.00c and 36.50c for March. There was also some business for April shipment between 35.00c and 35.50c, while May shipments were held at 34.50c. There were sales of July shipment at 32.00c and for the third quarter at 31.50c. American Electrolytic advanced £1.

Lake Copper Prices.

Monthly average prices of Lake Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.89	14.76	13.89	24.10	29.83
Feb.	15.37½	14.98	14.72½	27.44	34.04½
Mar.	14.96	14.72	15.11	27.42	
Apr.	15.55	14.68	17.43	28.91½	
May	15.73	14.44	18.81	29.28½	
June	15.08	14.15	19.92	27.44	
July	14.77	13.73	19.42	25.81	
Aug.	15.79	12.68	17.47	26.58	
Sept.	16.72	12.43½	17.76	27.86	
Oct.	16.81	11.66	17.92½	28.37½	
Nov.	15.90	11.93	18.86	31.71	
Dec.	14.82	13.16	20.37½	33.07½	
Av.	15.70	13.61	17.64	28.17	

Electrolytic Copper Prices.

Monthly average prices of Electrolytic Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.75½	14.45	13.71	24.10	30.26
Feb.	15.37	14.67	14.57	27.46	35.22
Mar.	14.92½	14.33½	14.96	27.44	
Apr.	15.48	14.34	17.09	29.31	
May	15.63	14.13	18.60	29.81	
June	14.85	13.81	19.71	27.49½	
July	14.57	13.49	19.08	25.60	
Aug.	15.98	12.41½	17.22	27.36½	
Sept.	16.55	12.08½	17.70½	28.26	
Oct.	16.34	11.40	17.86	28.64	
Nov.	15.47	11.74	18.83	32.22½	
Dec.	14.47	12.93	20.45	33.84	
Av.	15.52	13.31½	17.47	28.46	

Casting Copper Prices.

Monthly average prices of Casting Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.37	14.27½	13.52	23.06½	28.04½
Feb.	15.14	14.48	14.17	26.03	31.73½
Mar.	14.76	14.18	14.34	25.90	
Apr.	15.00	14.18	16.48	27.16	
May	15.45	14.00	17.41	27.37	
June	14.72	13.65	18.74	25.10	
July	14.40	13.34½	17.76	23.61	
Aug.	15.50	12.27	16.46	24.67	
Sept.	16.37½	12.00	16.75	25.93	
Oct.	16.73	11.29	17.32	27.17	
Nov.	15.49	11.63	18.41	30.37½	
Dec.	14.22	12.83½	19.73	31.74	
Av.	15.33	13.18	16.76	26.51	

Sheet Copper Price Changes.

The changes in the base price of sheet copper since Jan. 22, 1916 are given below, with price of Lake copper on the same date.

1916—	Sheet Copper.	Lake Copper.
January 31	32.00	25.25
February 5	33.00	26.00
February 11	34.00	27.50
February 23	35.00	28.25
March 1	34.00	28.12½
March 25	34.50	27.37½
April 13	35.50	29.25
April 20	36.50	29.75
May 5	37.50	29.75
August 2	35.50	25.50
August 18	37.50	27.00
November 10	38.50	29.75
November 14	40.00	31.75
November 20	41.00	33.75
November 29	42.00	33.75
1917—		
February 19	44.00	35.25

Waterbury Copper Averages.

	1913.	1914.	1915.	1916.	1917.
Jan.	17.00	14.75	14.12½	24.75	32.25
Feb.	15.50	15.12½	15.25	27.75	35.25
Mar.	15.12½	15.00	15.75	28.00	
Apr.	15.75	14.87½	18.50	29.00	
May	15.87½	14.75	22.50	29.87	
June	15.37½	14.37½	22.50	28.25	
July	14.75	14.12½	22.25	27.25	
Aug.	15.62½	13.00	19.50	27.00	
Sept.	16.87½	12.87½	18.50	28.00	
Oct.	16.87½	12.25	18.25	28.87½	
Nov.	16.25	12.25	19.37½	33.25	
Dec.	15.00	13.50	20.75	34.25	
Av.	15.83	13.91	18.94	28.85½	

Exports of Copper From the United States.

	(In tons of 2,240 lbs.)			
	1914.	1915.	1916.	1917.
January ..	36,018	26,193	23,663	26,958
February ..	34,634	15,583	20,648	24,067
March ...	46,504	30,148	26,321	
April	35,079	18,738	21,654	
May	32,077	28,889	16,062	
June	35,182	16,976	39,595	
July	34,145	17,708	35,066	
August ..	16,509	17,551	32,190	
September	19,402	14,877	29,803	
October ..	23,514	24,087	33,224	
November	24,999	23,168	22,598	
December.	22,166	42,426	26,486	
Totals ..	360,229	276,444	327,310	

Market Easier—Interest Centered in Futures.

There were constant rumors, at various times during the month, that the Entente-Allied Governments had renewed negotiations for a large tonnage of Electrolytic to be exported over the second half of the year but the month closed without any definite action being taken.

During the last three days of the month, a somewhat easier tone developed for spot and March shipments, there being a fractional decline in asking prices following the almost complete withdrawal of inquiry for these positions. Spot was difficult to sell over 36.50c, and March sold at 36.00c to 36.25c. Interest was mainly centered in June and July shipments, June selling at 34.00c and July at 33.50c. There were some inquiries in the market from wire drawers and from brass founders at 31.00c to 32.00c for third quarter shipment but little business was transacted.

Bad Railroad Situation and Weather Curtails Production.

Railroad embargoes and freight congestion impeded the industry throughout the month and were responsible for the further cutting-down of output at the refineries and for lighter shipments to consuming interests. Extremely cold weather and lack of adequate fuel were held responsible for decreased production at the smelters and mines, while labor difficulties as well as the deranged transportation system, caused smaller output at the refineries. The latter production is estimated to have decreased about 10% as compared with January, making the February production about 170,000,000 pounds. Since the first of January, the total output of refined copper is estimated at 355,000,000 pounds.

The February exports, were 24,937 tons, equivalent to 55,858,880 pounds; this is at the rate of 2,000,000 pounds per day for the 28 days of the month. The January exports were 26,958 tons, equivalent to 60,385,920 pounds. This is at the rate of about 1,948,000 pounds per day. It is thus evident that the February foreign outgo, more than maintained the January rate, although

the February shipments were disappointing. Imports in February were about 12,000 tons, and in January about 16,000 tons, returns, however, for February are not now complete.

Deliveries into domestic consumption in February, were probably less than 110,000,000 pounds, making the total shipments on home account since the first of January, 255,000,000 pounds and total deliveries into both foreign and domestic channels in the last 60 days, a little less than 342,000,000 pounds. It thus becomes evident that the refinery output, although cut down sharply, has exceeded deliveries by about 13,000,000 pounds since the first of January, but the output has fallen short of contract obligations by about 55,000,000 pounds. In the next few months, however, when traffic and weather conditions are more favorable, this decrease will be more than compensated by increased production which will probably again reach 210,000,000 pounds monthly, which was the maximum output in December last.

Copper Prices in February.

Day.	— New York —			London.	
	Lake.	Electro.	Casting.	Standard.	
	Cents.	Cents.	Cents.	£	s d
1	31.00	32.00	28.50	134	0 0
2	31.50	32.50	29.00	134	0 0
5	+	+	+	134	0 0
6	32.50	34.00	29.75	136	0 0
7	33.00	34.25	30.25	137	0 0
8	33.50	34.50	30.50	137	0 0
9	33.50	34.50	30.50	138	0 0
12 ....	.....	.....	.....	138	0 0
13	33.50	34.50	31.00	138	0 0
14	34.00	35.50	31.50	140	0 0
15	34.00	36.00	32.00	140	0 0
16	34.50	36.00	33.00	140	0 0
19	35.25	36.25	33.00	140	0 0
20	35.25	36.25	33.00	139	0 0
21	35.25	36.50	33.50	139	0 0
22 ....	.....	.....	.....	139	0 0
23	35.50	36.50	33.50	139	0 0
26	35.50	36.50	33.50	139	0 0
27	35.50	36.50	33.50	139	0 0
28	35.50	36.50	33.50	139	0 0
High ..	36.00	37.00	34.00	140	0 0
Low ..	30.00	31.00	28.00	134	0 0
Av'ge.	34.04 1/2	35.22	31.73 1/2	137	19 0

* Market nominal.

Tin in February.

Fears of Submarine Activities the Predominating Feature of the Month—Severance of Relations With Germany Causes Excitement—Net Decline Here 4c Per Pound; London Standard Up £9 5s.

The tin story for February, has for its main feature, the fact that prices were kept at a high level throughout the month owing to the predominant sentiment of fear that the German submersible campaign might cut off, or materially limit supplies; although ample tonnages were constantly arriving. The highest point touched, 56c, was registered on February 5th, after which a recession of 7.50c per pound occurred by the 20th. Immediately following came the announcement that no further shipments of tin from the East Indies would be made during the remainder of the month, to this country. A sharp advance of 1½c to 1c, at once occurred, followed by a less rapid rise until on February 28th, immediate delivery of Straits and Banca tin sold at 51c and 49c, respectively. Other features noted, were first, the increase of steady business in other kind of tin than Straits—Banca, Lamb & Flag and Australian metal, being proportionately larger than Straits business. Interest was also awakened to the increasing importance of the domestic production of tin that is being made from imported Bolivian concentrates—an average of 400 tons monthly, that are not listed in the general statistics as yet. The New York Metal Exchange reported total deliveries for the month, 3,930 tons—680 at Pacific Coast ports and 3,250 tons at Atlantic ports. The foreign market rose and fell sympathetically with conditions here and on the closing day was £203 for spot Straits and £202 5s for spot and future Standard.

Market Excited on Breaking of Relations With Germany.

At the beginning of the month the market was in an excited condition, due to the severance of our diplomatic relations with Germany, that in five days, carried prices upward, from 50c for spot Straits, and 48c for spot Banca, 9c per pound here, to 56c, and £9 in London, to £200 15s for spot Standard;

£201 15s for future Standard and £201 for spot Straits with Singapore £202 c.i.f. London. Sales reported at London of 230 tons and 400 tons, Singapore. Fear of the effect of the German warfare upon shipments caused anxious inquiries from small buyers and a careful examination of safety-stocks carried by all consumers, which resulted in immediate buying with a view to maintenance of reserve stocks, to be kept at the point desired. The arrival of nine steamers, bringing 1,100 tons in the first fortnight, provided ample supplies and on the 15th, 3,000 tons were reported, with prices nominal at 51c for Straits and 48 to 48.50c for Banca at dock. A continued decline of 4c per pound developed an active market during which consumers replenished safety stocks and by the 20th, the reaction had proceeded close to 48c for spot Straits

Tin Prices in February.

Day.	New York.	London.		
	Cents.	£	s	d
1	49.50	195	5	0
2	51.50	199	5	0
5	†	200	15	0
6	55.00	202	15	0
7	55.00	201	0	0
8	54.50	200	5	0
9	54.00	200	10	0
12 .....	.....	200	5	0
13	53.25	199	5	0
14	52.00	199	10	0
15	51.00	199	10	0
16	50.00	198	0	0
19	49.00	195	10	0
20	48.75	194	10	0
21	49.00	195	5	0
22 .....	.....	197	5	0
23	49.37½	197	5	0
26	49.87½	198	10	0
27	50.50	201	0	0
28	51.00	202	5	0
High	55.00	202	15	0
Low	48.75	195	5	0
Average	51.37	198	17	0

† Market nominal.

Visible Supplies.

Visible supply of tin at end of each month:

	1913.	1914.	1915.	1916.	1917.
Jan.	13,971	16,244	13,901	17,041	18,169
Feb.	12,304	17,308	14,548	16,511	19,627
Mar.	11,132	16,989	15,467	18,782	
April	9,822	15,447	15,785	19,739	
May	13,710	17,862	14,646	19,614	
June	11,101	16,027	15,927	19,363	
July	12,063	14,167	16,084	18,404	
Aug.	11,261	14,452	15,127	18,042	
Sept.	12,943	14,613	15,191	16,192	
Oct.	11,857	10,894	13,154	17,415	
Nov.	14,470	11,483	16,451	21,186	
Dec.	13,893	13,396	16,216	20,737	
Av'ge	12,377	14,907	15,208	18,585	

Shipments From the Straits.

Monthly shipments of tin from the Straits Settlements to Europe and United States:

	1913.	1914.	1915.	1916.	1917.
Jan.	6,050	5,290	5,200	6,095	4,815
Feb.	4,660	6,520	5,584	6,250	6,255
Mar.	4,810	4,120	4,970	5,170	
April	4,400	4,930	5,270	4,685	
May	6,160	6,900	6,759	3,965	
June	4,280	5,870	6,665	6,210	
July	4,770	4,975	5,606	5,410	
Aug.	6,030	3,315	4,712	4,526	
Sept.	5,160	4,973	5,296	3,270	
Oct.	5,020	4,610	4,441	5,868	
Nov.	5,560	5,155	6,713	5,380	
Dec.	5,110	6,485	5,301	4,758	
Total	62,550	63,093	66,517	61,587	
Av'ge.	5,213	5,258	5,543	5,132	

Consumption In the U. S.

Monthly deliveries of tin in the United States exclusive of Pacific Coast:

	1913.	1914.	1915.	1916.*	1917.*
Jan.	3,700	3,600	2,300	4,452	7,177
Feb.	3,500	3,400	2,475	6,388	3,930
Mar.	5,900	4,450	3,200	4,726	
April	3,450	4,300	3,200	4,202	
May	3,350	3,800	5,600	5,455	
June	3,800	3,650	3,900	6,398	
July	3,900	3,900	5,300	4,432	
Aug.	3,600	2,900	4,500	4,335	
Sept.	3,100	3,600	4,300	4,025	
Oct.	3,700	3,700	4,900	4,556	
Nov.	2,800	2,600	2,975	3,165	
Dec.	3,100	1,900	5,200	4,082	
Total	43,900	41,700	48,750	56,216	
Av'ge.	3,658	3,475	4,062	4,685	

* Includes deliveries at Pacific coast.

Monthly Tin Statistics.

Compiled by New York Metal Exchange
(Tons of 2,240 lbs.)

	Feb. 1917.	Jan. 1917.	Feb. 1916.
Straits shipments	1917.	1917.	1916.
To Gt. Britain..	4,264	1,905	3,015
" Continent ..	943	745	1,145
" U. S.	1,048	2,165	2,090
Total from Straits	6,255	4,815	6,250
Total from Australia	95	239	316
Consumption			
London deliveries	1,117	1,215	1,183
Holland deliveries	85	105	
U. S.	3,930	7,177	6,388
Total	5,132	8,497	7,571

Stocks at close of month:

In London—			
Straits, Australian	2,927	2,494	974
Other kinds	995	1,252	1,607
In Holland			
In U. S.	3,027	2,622	1,308
Total	6,949	6,368	3,906
Afloat close of month:			
London	6,444	4,450	4,645
Banca & Billiton	2,018	2,428	1,257
U. S.	4,216	4,923	6,703
Total	12,678	11,801	12,605

	Feb. 28, 1917.	Jan. 31, 1917.	Feb. 29, 1916.
Total visible supply	19,627	18,169	16,511

Straits Tin Prices In- New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	50.45	37.74	34.30	41.88	44.19
Feb.	48.75	39.93	37.50	42.68	51.37
Mar.	46.88	38.08	49.93½	50.42	
Apr.	49.12	36.10	47.98	51.75	
May	49.14	33.30	38.78	49.15	
June	44.93	30.65	40.37	42.18	
July	40.39	31.75	37.50	38.46	
Aug.	41.72	50.59½	43.39	38.54	
Sept.	42.47	32.79	33.13	38.70½	
Oct.	40.50	30.39½	33.08	41.16	
Nov.	39.81	33.50	39.37½	44.17	
Dec.	37.64	33.60	38.75	42.66½	
Year	44.32	35.70	38.66	43.48	

and to 46.75 to 47c for Banca, while April-May positions were 42.25c to 45.50c per pound, respectively. The decline in the foreign market had brought prices down to £193. Immediately following, on the 21st, came the announcement that no shipments from the East Indies were to be made during the remainder of the month and excitement again ran high causing a sharp rise of $\frac{1}{2}$ c to 1c per pound, on the same day, with 49.25c publicly bid for spot Straits. London responded promptly with an advance of £2 all along the line and Singapore rose 15s. During the last week, a very strong tone was in evidence and consumers' interest

was again awakened to a good buying point. On the 26th, 49c was the settling price; on the 27th, it was noted that all kinds of tin were in good demand, with spot 50.75c as the settling price, and with sellers asking 48c for June, 47 for July-August and 46.50 for September shipments. On the closing day, stocks in store and ex steamer at dock, were reported by the New York Metal Exchange, to be 3,027 tons, indicating an ample supply of tin stocks. Wholesale spot tin was nominally 51c, f.o.b. and city delivery 50.75c. London advanced on spot Straits to £203, and to £202 5s on both spot and future Standard.

Spelter in February.

Uncertainty as to the Future Causes Quiet and Slow Market Throughout February— Net Advance for Month About $\frac{7}{8}$ c Per Pound.

Uncertainty, as to outlook in regard to future conditions, which caused indecision in the mental attitude of traders, played a very important part in the spelter market in February, by restricting trade activity to the minimum. The continued indifference of consumers was marked throughout the month but was fully explained by the fact that ample stocks for all needs were held at their plants. While the freight congestion and railroad embargoes were less felt than in other metals, up to the last ten days, they then began to have quite some influence.

A decline in prices of spelter at the beginning of the month, was attributed to the uncertainty as to developments, which ensued immediately upon the severance of our diplomatic relations with Germany, and to the expectation of her new "frightfulness" in the destruction of shipping. While trading was very light, the tone of the market was firm and prices gradually recovered, rising from 9.80c to 10.05c for prompt-February, New York, and 9.62 $\frac{1}{2}$ c to 9.87 $\frac{1}{2}$ c East St. Louis, at the beginning of the month, to 9.92 $\frac{1}{2}$ c prompt New York and 9.75c prompt East St. Louis, on the 5th; with brass special held at 1c premium over prime

Western. By the 13th, the lack of trading on either domestic or foreign accounts began to excite comment and to produce uneasiness. Prices had been stationary at 10.42 $\frac{1}{2}$ c to 10.67 $\frac{1}{2}$ c prompt-February New York, and 10.25c to 10.50c same position East St. Louis, with March at 10.17 $\frac{1}{2}$ c to 10.42 $\frac{1}{2}$ c New York, and 10.00c to 10.25c East St. Louis and second quarter, 9.80c to 10.05c New York and 9.62 $\frac{1}{2}$ c to 9.87 $\frac{1}{2}$ c East St. Louis, ever since the 8th of the month. Zinc ore at Joplin, by the middle of the month was selling at \$80 to \$90 per ton and this was at that time considered an encouraging indication. With the beginning of the second fortnight, it was noted that spelter seemed unaffected by the freight congestion and embargoes, but this was also explained by the well covered condition of consumers who were under no pressing necessity for supplies.

High grade spelter was in good demand on the 16th, and on the 19th, a stronger tone was manifested in February shipments, which sold at prevailing prices. Immediately following prices advanced to 10.55c to 10.67 $\frac{1}{2}$ c for prompt-February New York, and 10.37 $\frac{1}{2}$ c to 10.50c East St. Louis same

positions, and on the next day sales were made at 10.50c East St. Louis. By this time the freight congestion was felt, and premiums of $\frac{3}{8}$ c over the cost of prompt shipments, were offered. On the 21st, prompt-February spelter sold at 10.62 $\frac{1}{2}$ c East St. Louis, and March at 10.37 $\frac{1}{2}$ c with both buyers and sellers firm and persistent in refusing to grant any concession whatever. Again the lack of trading was very noticeable. On the 23rd, 40 tons of spot spelter in New York were offered at 12.00c but there were no buyers. On the 27th, after there had been no trading for several days, some sales of second quarter were reported at 9.75c St. Louis basis. Galvanized sheets were not sold to over 50% of productive capacity for the month. On the closing day, dealers were in the market at prices that had been nominal during the past week, which were $\frac{7}{8}$ c higher than those prevailing on the first of February. Brass spelter was held at $\frac{5}{8}$ c to $\frac{3}{4}$ c premium over prime Western. Total exports for the month were 11,-

030 tons.

An interesting item, says that the new product, Anaconda electrolytic zinc, is hereafter to be known as "Anaconda Electric", this name being irprinted upon slabs and cakes when they are finally ready for the market. The relatively cheap power obtainable in Montana, it is said, makes it possible for this pure grade of spelter to be manufactured at 3c per pound.

Spelter (Monthly Averages.)

	New York		St. Louis	
	1916.	1917.	1916.	1917.
Jan.	18.18 $\frac{1}{2}$	9.97	18.01	9.82
Feb.	20.09	10.49	19.92	10.31 $\frac{1}{2}$
Mar.	18.10		17.91 $\frac{1}{2}$	
Apr.	18.61 $\frac{1}{2}$		18.44	
May	15.93		15.75 $\frac{1}{2}$	
June	12.80		12.62	
July	9.70		9.52 $\frac{1}{2}$	
Aug.	9.10		8.92	
Sept.	9.23 $\frac{1}{2}$		9.06	
Oct.	10.01		9.83	
Nov.	11.92 $\frac{1}{2}$		11.75	
Dec.	11.28 $\frac{1}{2}$		11.11	
Av'ge	13.75		13.57	

Spelter Prices in February.

Day.	New York. Cents.	St. Louis. Cents.	London. £ s d
1	9.92 $\frac{1}{2}$	9.75	47 0 0
2	9.67 $\frac{1}{2}$	9.50	47 0 0
3	9.92 $\frac{1}{2}$	9.75	47 0 0
4	10.30	10.12 $\frac{1}{2}$	47 0 0
5	10.42 $\frac{1}{2}$	10.25	47 0 0
6	10.55	10.37 $\frac{1}{2}$	47 0 0
7	10.55	10.37 $\frac{1}{2}$	47 0 0
8	10.55	10.37 $\frac{1}{2}$	47 0 0
9	10.55	10.37 $\frac{1}{2}$	47 0 0
10	10.55	10.37 $\frac{1}{2}$	47 0 0
11	10.55	10.37 $\frac{1}{2}$	47 0 0
12	10.55	10.37 $\frac{1}{2}$	47 0 0
13	10.55	10.37 $\frac{1}{2}$	47 0 0
14	10.55	10.37 $\frac{1}{2}$	47 0 0
15	10.55	10.37 $\frac{1}{2}$	47 0 0
16	10.55	10.37 $\frac{1}{2}$	47 0 0
17	10.61 $\frac{1}{4}$	10.43 $\frac{3}{4}$	47 0 0
18	10.67 $\frac{1}{2}$	10.50	47 0 0
19	10.80	10.62 $\frac{1}{2}$	47 0 0
20	10.80	10.62 $\frac{1}{2}$	47 0 0
21	10.80	10.62 $\frac{1}{2}$	47 0 0
22	10.80	10.62 $\frac{1}{2}$	47 0 0
23	10.80	10.62 $\frac{1}{2}$	47 0 0
24	10.80	10.62 $\frac{1}{2}$	47 0 0
25	10.80	10.62 $\frac{1}{2}$	47 0 0
26	10.80	10.62 $\frac{1}{2}$	47 0 0
27	10.80	10.62 $\frac{1}{2}$	47 0 0
28	10.80	10.62 $\frac{1}{2}$	47 0 0
High	10.92 $\frac{1}{2}$	10.75	47 0 0
Low	9.55	9.37 $\frac{1}{2}$	47 0 0
Average	10.49	10.31 $\frac{1}{2}$	47 0 0

Sheet Zinc Price Changes.

The following table gives the changes in the base price of sheet zinc for the past year, together with the price of spelter ruling on the same day.

1916—	Spelter	
	Sheet Zinc.	St. Louis.
January 26,	24.00	19.00
February 17	25.00	20.87 $\frac{1}{2}$
April 22	25.50	18.75
May 15	24.50	15.50
May 23	23.50	14.87 $\frac{1}{2}$
May 29	22.50	14.12 $\frac{1}{2}$
June 2	21.00	13.12 $\frac{1}{2}$
June 13	20.00	13.37 $\frac{1}{2}$
June 20	19.00	12.00
June 27	18.00	11.37 $\frac{1}{2}$
July 6	17.00	9.37 $\frac{1}{2}$
July 11	15.00	8.62 $\frac{1}{2}$
October 26	16.00	10.12 $\frac{1}{2}$
November 10	17.00	11.12 $\frac{1}{2}$
November 17	18.00	12.00
November 20	19.00	12.12 $\frac{1}{2}$
November 24	20.00	12.87 $\frac{1}{2}$
November 24	21.00	12.87 $\frac{1}{2}$

The Spelter Situation.

An Interesting Discussion of Market Conditions and Prospects.

Charles S. Trench & Company, New York, in their weekly circular, March 3rd, say:

"All signs point to there having been an even balance between the demand and supply of spelter during the past two months, and that notwithstanding the fact that the production has been unavoidably curtailed on account of climatic conditions in the West. We do not mean by this that the actual production during January and February exactly counterbalanced the domestic consumption and the exports because we know that many consumers, notably the brass trade, laid in an extra large stock of spelter last Autumn in anticipation of a small production during the Winter and as a safeguard against delays and interruptions in shipments through freight congestion and embargoes, and have drawn against these safety stocks to make good any shortage. There is no doubt as to the existence of these stocks but if any proof is needed we would point to the fact that the extraordinary delay in spelter shipments en route from the West, has caused no embarrassment to the large brass manufacturers in the East, which it would surely have done had they been dependent on the prompt arrival of these supplies for their requirements. The sheet galvanizing trade, it is true, has been put to some inconvenience, but they have generally been buying on a hand to mouth policy and their operations, which were already but a shadow of what they formerly were, have been further reduced. The production of galvanized sheets which before the war accounted for 50% of the total consumption of spelter, is to-day using less than 20% and the mills are being operated to not over one-half of their capacity. The brass trade absolutely had to have spelter and they took no chances, but the sheet galvanizers could afford to run short because in that case they marketed their product as black sheets instead of coating them."

"Now we are getting to the end of the Winter and are nearing the time when the production of spelter should ordinarily increase and the question arises whether there will be requirements for what can be supplied. There are 215,000 retorts capable

of turning out at the rate of 800,000 tons of spelter a year or with allowances for redistilling say, 700,000 tons. In addition, there is the electrolytic production of at least 50,000 tons, which is a source of supply that had barely started operations six months ago. It would therefore be a conservative estimate to say that we have the facilities for producing 750,000 tons or 100,000 tons over last year, supposing that the ore can be secured which would permit operations on such a scale.

"The next thing to find out is where all this spelter would be used. Last year the apparent domestic consumption was 445,000 tons included in which was the addition to brass consumers' stocks referred to above. The brass industry has been operating right up to its capacity but allowing for the fact that this capacity at the end of 1916 was greater than it was during the first half, through the erection of new plants and the enlargement of others, there is room for a larger consumption this year than last. However, the reports from New England and elsewhere have lately spoken of the slowing down in operations, and we hear of workmen being laid off and plants closing half a day on Saturdays and not operating on Sundays which, of no great consequence, are very different from the reports we were getting three or six months ago. The brass mills still have quantities of unfilled orders on their books but they are not getting in new orders as rapidly as they are completing the old ones and the brass trade is really facing the same sort of situation as the spelter producers, in the respect that they have an immense capacity which they may not be able to fully employ.

"In the galvanizing trade we do not look to see any material change in the use of spelter from last year. The sheet galvanizers see no inducement in trying to build up the old trade, in fact it is too late now to try to do anything this year, because their product is already sold in another form. In the pipe and wire lines there may be a small increase and likewise among the other forms of galvanizing, but as we are dealing in large tonnages and are trying to find a use for an extra 100,000 tons of

spelter this year, it is needless to expect to find an answer there.

"Then as regards our export trade, which in 1916 accounted for a total of 210,000 tons or an average of 17,500 tons a month, will this trade be enlarged or even maintained at this level? The probabilities are that it will not. First of all the consumption of spelter in England, France and other allied countries has practically been checked except for war purposes, and when compared with even a year ago, this represents a loss of thousands of tons. Secondly, the production of spelter in England and in Australia and in Canada is being increased, likewise in Japan, which in the aggregate will amount to more than we have been inclined to believe and unless the reports we receive are entirely wrong, there will be a heavy falling off in the purchases by the Allied countries during the second half of the year. Even now, although we know that spelter is being bought off and on for export, nobody can help but notice that the orders are not up to the same scale as they were last year. An increase this year over the 210,000 tons exported in 1916, appears to us to be less than a remote possibility, notwithstanding the supposition that smaller purchases of finished brass goods by the Allies would mean larger purchases of the raw materials, and we believe that we will be doing well if our exports average 15,000 tons a month or 18,000 tons for the whole year.

"It will be seen from the above that we do not see a demand for 100,000 tons more spelter than we used last year unless there is a sudden movement to carry out extensive military preparations in this country. We do not mean by this simply the letting of contracts which would not increase the consumptive capacity but only transfer the operations of manufacturers from ordinary domestic or Allied business over to Government work, but by the readjustment of metal plants all over the country to munition work as has been done in Europe. Before that becomes necessary we believe that the war will be over, for unless all signs are wrong, Germany is on her last legs and will collapse under the pressure which the

Allies will be able to bear on her during the next six or eight months.

"All things considered we believe that the production of spelter will not be up to the fullest capacity because there will not be the demand for it, at any rate not the demand at the price that would have to be paid to maintain full operations because full operations mean an enormous ore supply and hence high priced ore and high cost spelter. Remember that the situation in the spelter industry is the reverse of what it was two years ago or even a year ago, because while then there was a shortage of smelters and an abundance of ore, now there is an abundance of smelting capacity and if not a shortage at least a tightness in ore. The profits of the smelters which were reckoned for a long time at several cents per pound, have even on to-day's market dropped to a vanishing point. Take 60% ore at \$85, and allow a smelting charge of \$17 and an 8% fee very and try and figure a profit in selling spelter at 10c per pound. It can be done only for percentage of brass special is produced in the operation, but not otherwise. The smelters by curtailing, would somewhat improve their position because with a lesser demand for ore, the ore price would decline, but there could be no maintenance of fancy prices for spelter with idle smelting capacity ready to come in as in whenever the business was profitable. As we said some time ago, the price of spelter this year is not likely to get very far away from the production cost and there is no likelihood of a repetition of the erratic fluctuations of 1915 and 1916. So long as production remains up around the present level the price will be high on account of the impossibility to obtain enough low cost ore, but when production declines the price of both ore and spelter will decline with it.

The market has been in a more or less stagnant condition during the past month with consumers buying very little. Within the last few days dealers have been buyers of March and April shipments which has given the market a firmer tone but consumers have not yet followed their example, so that business is still confined to narrow limits."

Lead in February.

Lead and Lead Ore Sell at Highest Prices on Record—Famine Conditions Caused by Serious Freight Congestion—Month Closes With Net Advance of 2c per Pound.

February, ever will be memorable in industrial history as the month in which lead sold at a new maximum price, 10.75c per pound, in the open market, and when 8.50c per pound was established as the official base of the American Smelting & Refining Company, being 1¹/₂c per pound over the previous highest price of the Trust. The other salient features were developed from the extraordinary market conditions arising from the unparalleled, deplorable traffic situation. The inability of the railroads to relieve freight congestion resulted in a famine of lead, by and through which many consumers were compelled to temporarily suspend plant operations. A violent advance in the price of lead ore in the Joplin district from \$91.50 to \$150 per ton, breaking all previous records, was primarily due to light production in the Miami field, but railroad inefficiency was a contributory cause.

Spot Metal Very Scarce.

While at the beginning of the month, it seemed that political complications with Germany were less likely to have a disturbing effect upon lead than upon other metals—owing to the sound basic conditions existing, and because at first the trade remained calm, with no immediate changes in prices, as occurred in other metals—it soon became evident that irregularities in prices had developed, entirely due, however, to other causes than to the breaking of diplomatic relations with Germany and to her ruthless war upon the high seas. When on the 9th, the official Trust price was advanced to 8.50c New York—the highest ever named by them—spot lead in the open market was selling at 9.25c New York, with February-March shipments from the West at 8.75c, in limited transactions. From that time on the scarcity of spot lead increased and prices advanced in the outside market, with predictions freely made that the Trust price would

again rise because of inability of producers to satisfy the pressing and urgent demands of consumers. By the close of the first fortnight, 9.37¹/₂c was paid for spot lead in New York, with February-March positions held at 9.25c, St. Louis, and 75,000 tons of lead, according to competent trade authority, were tied up en route from the West. It had become a common experience in the trade by this time, for lead to be six days in making its journey to New York from St. Louis.

Large Inquiries Unsatisfied.

On the 16th, sales were made to consumers at 10.25 for immediate delivery. After covering pressingly urgent necessities, they promptly withdrew from the market. This was 1³/₄c premium over the Trust price. On the 19th, 10.50c was paid, and it was said that inquiries for 500 to 1,000 tons could not be satisfied at any price, because there was no lead to fill them. It was also said that 10.75c was rejected for spot lead. Wild rumors in circulation at this time gave rise to a report that sales had been made at 11.50c but this was not verified and exaggerations of this kind were criticised, in view of the fact that conditions were already serious enough without being falsely added to: 11.00c, however, was asked, and on the 20th 11.00c or even 12.00c bid, would not have secured any lead because no spot lead existed. The day following, it was authoritatively announced that the largest producer had 10,000 tons of lead on the way to customers, and that other producers had proportionate amounts, according to their output, en route to consumers. At this time, also, one of the largest plants, with rated monthly capacity of 15,000 tons, reported that because of delay in obtaining raw materials, their output in February would not exceed 3,000 tons. The seriousness of the situation, led some conservative and experienced members of the trade to advise caution and calmness in or-

der to prevent complete disorganization, which the almost frenzied rise in prices might develop, if not checked in time. Lead ore at Joplin rose to \$150 on the 19th, but receded to \$120 on the 23rd, only to rise on the 26th to \$122.50 where it was stationary during the following days of the month. On the 27th,

Lead Prices in February.

Day.	New York* Cents.	St. Louis. Cents.	London. £ s d
1	8.50	8.12½	30 10 0
2	8.37½	8.12½	30 10 0
3	7	8.12½	30 10 0
4	8.75	8.25	30 10 0
5	8.75	8.25	30 10 0
6	8.75	8.31¼	30 10 0
7	9.00	8.75	30 10 0
8	9.00	8.75	30 10 0
9	9.00	8.75	30 10 0
10	9.00	8.75	30 10 0
11	9.12½	9.00	30 10 0
12	9.12½	9.12½	30 10 0
13	9.12½	9.12½	30 10 0
14	10.12½	9.50	30 10 0
15	10.25	9.50	30 10 0
16	10.50	9.75	30 10 0
17	10.50	9.75	30 10 0
18	10.50	9.75	30 10 0
19	10.50	9.75	30 10 0
20	10.50	9.75	30 10 0
21	10.50	9.75	30 10 0
22	10.50	9.75	30 10 0
23	10.50	9.75	30 10 0
24	10.50	9.75	30 10 0
25	10.50	9.75	30 10 0
26	10.50	9.75	30 10 0
27	10.75	10.00	30 10 0
28	8.25	8.00	30 10 0
High ..	10.75	10.00	30 10 0
Low ...	8.25	8.00	30 10 0
Average.	9.61	9.04	30 10 0

* Outside market. † Market nominal.

Lead (Monthly Averages.)

	—New York*—		—St. Louis—			
	1915.	1916.	1917.	1915.	1916.	1917.
Jan.	3.74	5.94	7.81	3.57	5.80	7.57
Feb.	3.82	6.23	8.34	3.72	6.17	9.04
Mar.	4.03	6.83		3.98	7.46	
Apr.	4.19	7.50		4.11	7.67	
May	4.33½	7.50		4.16	7.28	
June	5.86	7.02		5.76	6.77	
July	5.74	6.54		5.52	6.20	
Aug.	4.75	6.25		4.59	6.19	
Sep.	4.62	6.75		4.53	6.71	
Oct.	4.59½	7.00		4.51	6.87½	
Nov.	5.15	7.00		5.07	6.96	
Dec.	5.34½	7.44		5.26½	7.53	
Av.	4.67½	6.83		4.57	6.80	

* Lowest price.

improved traffic conditions, owing to better weather, were reported and business quietly awaited developments but on the closing day, supplies were as scarce as ever, and extreme nervousness was evident among consumers whose needs on contracts had become pressingly heavy. Early New York deliveries were at a premium of 1½c to 1½c per pound, spot metal commanding 10.50c while March was held at 9.50c and April at 9.25c and May and June at 9.00c.

During the month, there was a net rise of 2c per pound on spot at New York, and 1½c to 1¾c at East St. Louis, and an advance of 1¼c to 1½c per pound on the March position.

Waterbury Spelter Averages.

	1913.	1914.	1915.	1916.	1917.
Jan.	7.56	5.54	6.55	22.25	13.05
Feb.	6.81	5.70	11.85	22.70	13.80
Mar.	6.56	5.59	12.15	23.15	
April	6.08	5.50	13.85	23.20	
May	5.77	5.38	20.55	21.20	
June	5.50	5.37	25.60	17.40	
July	5.61	5.26	24.90	15.20	
Aug.	5.99	5.66	19.30	13.60	
Sept.	6.13	5.91	17.85	13.70	
Oct.	5.74	5.23	16.85	12.95	
Nov.	5.60	5.38	19.36	14.10	
Dec.	5.44	5.90	21.15	13.20	
Av'ge	6.06½	5.53½	17.50	17.72	

Aluminum and Silver Prices.

	—New York—			
	Aluminum.		—Silver—	
	1916.	1917.	1916.	1917.
Jan. ...	54.33	60.00	56.77½	75.63
Feb. ...	57.50	58.05½	56.75½	77.57
Mar. ...	60.52		57.93½	
April ...	60.00		64.41½	
May ...	60.00		74.27	
June ...	62.09		65.02½	
July ...	60.15		62.94	
Aug. ...	59.48		66.08	
Sept. ...	61.90		68.51½	
Oct. ...	64.55		67.85½	
Nov. ...	64.80		71.60	
Dec. ...	63.40		75.76½	
Average	60.73		65.66	

Antimony in February.

**Serious Freight Situation Causes Rise in Price of 10c Per Pound—Spot Price Double the Cost of Importation For First Time In History
—Net Advance for Month 7c Per Pound.**

The scarcity of antimony, due to overland freight congestion from Pacific ports, East, was the predominant feature in the market throughout February, disturbing the mental attitude of the trade regarding the market and unsettling prices. A somewhat sensational rise from 25c at the beginning of the month, carried prices upward to 30c to 35c by the 8th, but with the arrival of 300 tons on the day following, a decline set in that continued until the 16th, when 29c to 30c per pound was registered. Delayed arrivals from the Orient, via the Pacific, wholly due to overland freight congestion, then began to occasion anxiety which later becoming accentuated, an advance set in that again carried prices upward to 32c to 34c on the 24th, after which there was another decline to 31c to 33c on the closing day.

As early as the sixth, spot antimony was being very carefully held for retail customers, and a further advance in price was indicated. Excitement over the situation became pronounced when a very large inquiry was distributed generally throughout the trade on the ninth, calling for spot and February antimony. There were also many inquiries for February-March shipments from the Orient, considerable business being transacted at 14 to 15c in bond for February and 13.75c to 14.87½c for March, dealers being the main buyers. As was the case with other metals, fear of a serious limitation in supplies, although not due to any danger from German destruction of antimony-laden vessels, caused spot prices to rise until they were double the cost of importation, a condition never before existing in the market. By the eighth, it was generally understood that one or two large consumers were urgently in the market for February supplies, which they must have, and prices rose to 30c to 35c per pound, the highest for the month. Reports circulated about this time, and persisting for several

days, to the effect that large tonnages, for ammunition makers, involving several thousand tons, for early delivery, were not verified—the fact being, that 70 to 75 tons were urgently wanted.

Delayed communication with the Orient interfered with business for future shipment, and by the 13th, there was a growing belief among some of the trade, that there was an effort under way, to exploit consumers. Various reports appeared in the trade papers concerning the antimony market which afterward proved to have no foundation in fact. A recession in prices really began on the 11th, with the arrival of 300 tons to relieve the situation. In the next few days, the market was steady and quiet at 28c to 29c for spot

Aluminum, Silver, and Antimony Prices in February.

New York			
Day.	Aluminum. Cents.	Silver. Cents.	Antimony. Cents.
1	58.00	76.75	25.00
2	58.00	76.75	25.00
3 .....	.....	76.75	.....
5	58.00	76.75	25.00
6	58.00	77.00	27.00
7	58.00	77.12½	31.00
8	58.00	77.25	32.50
9	58.00	77.37½	32.50
10 .....	.....	77.37½	.....
13	58.00	79.00	29.00
14	58.00	78.62½	28.50
15	58.00	78.62½	28.50
16	58.00	78.62½	29.50
17 .....	.....	78.62½	.....
19	58.00	78.62½	31.00
20	58.00	78.12½	33.00
23	58.00	77.62½	33.00
24 .....	.....	77.62½	.....
26	58.00	77.12½	32.50
27	58.00	77.00	32.00
28	59.00	77.00	32.00
High	60.00	79.00	35.00
Low	57.00	76.75	25.00
Average	58.65	77.57	30.00

Chinese and Japanese with February-March shipments, 15.87¹/₂c in bond. At about this time, the selling of American antimony ¹/₄c to ¹/₂c under the price of importations, attracted some attention. Another advance, due to short supplies began on the 16th, with prices of Chinese and Japanese spot at 29c to 30c, and futures firm at 19.50c duty paid, for April delivery, from which time on the situation in delayed arrivals de-

veloped into the acute stage and prices advanced to 32c to 34c again, and within 1c of the previous high mark. There was no spot antimony to be had apparently, and on the 26th, after practically no business for a few days, offerings were made at 32c to 33c. By the closing day, the decline had proceeded to 31c to 33c, with concessions of 3c to 4c for March shipments.

Aluminum in February.

**Market Dull and Uninteresting Throughout the Month—
Price Up 1c Per Pound.**

Throughout February the aluminum market was in a dull and uninteresting condition with almost stationary prices until the very last day when No. 1 Virgin advanced from 57c to 59c to 58c to 60c per pound; pure 98-99% remelted from 52.25c to 53c to 55c, while No. 12 alloy remelted remained the same as at the beginning of the month, although at one time during the month, both 98-99% remelted and No. 12 alloy declined 1c per pound to 51c to 53c for the former, and to 37c to 39c for the latter. One feature noted, was the objection of the trade to the increasing practice of shipping broken ingots, which occasions much inconvenience in handling and frequently entails loss because broken pieces are very often lost. The chance of recovering from the railroad in such cases, is very remote, and the consensus of opinion in the trade, is that the practice should cease.

According to the report of the United States Geological Survey for 1916, made public about the beginning of the second week in the month, domestic consumption of aluminum amounted to something a trifle over 121,000,000 pounds, indicating an increase of a little more than 21% over the 1915 consumption. These estimates do not include secondary aluminum which is obtained from scrap material. By the 13th, delayed shipments, owing to the deplorable freight congestion, caused the Aluminum Company of America to

announce unwillingness to offer any more metal, until such time as they had the metal on hand for delivery. On the 14th, some independent sheet mills advanced prices of sheets to 67c to 70c from the previous price of 60c to 65c. On the 19th, sales of a few carload lots of No. 1 Virgin were reported at 57.50c f.o.b shipping point, with one carload for prompt delivery at 58c—a welcome interruption of the general dullness. The uncertainties concerning shipments from abroad, had a share in contributing to the dullness of the market, also, and the firmer tone evidenced on the closing day with sales of prompt No. 1 Virgin at 59c was gratifying.

Aluminum Prices in New York.

Extreme price fluctuations of pure aluminum (No. 1 Virgin 98-99%) in New York: by months:

	— 1916 —		— 1917 —	
	High.	Low.	High.	Low.
Jan.	56.00	53.00	64.00	56.00
Feb.	63.00	53.00	60.00	57.00
Mar.	63.00	58.00		
April ...	61.00	59.00		
May	61.00	59.00		
June	65.00	59.00		
July	62.00	59.00		
Aug.	62.00	58.00		
Sept.	63.00	60.00		
Oct.	67.00	62.00		
Nov.	66.00	63.00		
Dec.	65.00	60.00		
Year	67.00	53.00		

STEEL AND METAL DIGEST

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NEW YORK, APRIL, 1917.

NO. 4.

The Striking Effect of 32 Months of War on the Prices of Metals is vividly shown in the three-color diagram published in this issue. We have plotted the high and low price of Copper, Spelter, Tin, Lead, Antimony, and Aluminum for each month since August, 1913 (one year before the war commenced) to date. The chart emphasizes the drastic fluctuations during the past thirty-two months. All the metals are plotted on the same scale, thus their relative values are shown at a glance.

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America at War.

"To such a task we can dedicate our lives and our fortunes, everything that we are and everything that we have, with the pride of those who know that the day has come when America is privileged to spend her blood and her might for the principles that gave her birth and happiness and the peace which she has treasured. God helping her she can do no other."

America has been electrified by the keynote address of her President, which will rank as one of the greatest state papers in the world's history. It is America's declaration of world freedom, seven score years after the declaration of her own freedom. America's vision is clear, what she seeks and what she will do. So much of her blood and her treasure will be poured out, to the last, as will be needed to help win the contest.

Where do we stand in industry and finance? Our factories are humming, our workmen are employed, our banks are overflowing. Since the world began no nation has ever entered war with industry and finance in the condition which obtains in this country today. War closes stock exchanges, throws men out of employment, causes the hoarding of money, raises interest rates, tightens the lines of credit. When this war started there were financial crises not only in every country involved but in most of the neutral coun-

tries. Our own stock exchanges were closed for months and our industrial depression was greatly accentuated. England immediately faced a problem of unemployment and there was a flood of suggestions that the big concerns, that had credit, should place orders for materials so that employment might be given.

An Unprecedented War Position.

How different, how unparalleled in the history of the world, is the American position in industry and finance today! The shock came two years and a half ago and then we had our suffering. All is long since past. Mark the contrast. Far from there being a shock, or threat of a shock, President Wilson in his call to arms urged that the credits the Government would require should be sustained "so far as they can equitably be sustained by the present generation, by well conceived taxation", it being our duty "to protect our people so far as we may against the very serious hardships and evils which would be likely to arise out of the inflation which would be produced by vast loans." In finance we are secure. If there were any small spots of weakness in our financial position, the Federal Reserve Board has taken up ultra precautionary measures.

It is not the mere accumulation of war profits in the past two years that has put us in this position. Our first war chest is three and a half billion dollars, in itself two-thirds of our accumulated balance in our foreign trade. Our foreign trade has been but a small fraction as large as our enormous domestic trade, which from the quickening influence of the war and a natural reaction from the preceding depression, has reached a volume far beyond the highest level ever attained before. Everybody has been working and working hard.

Instead of their being a panic and a forced closing of the Stock Exchange, there has been a slight recession in prices on the exchange and if its cause was rightly diagnosed it is in itself a comfort, for the appraisal was that it was due to expectation of heavy taxation of earnings, that as far as possible we may pay as we go, and as we strive to leave a heritage of freedom to future generations we may not leave them a burden of debt.

Our Work.

Our work, then, is not to protect our finances, to conserve values, and to find employment for idle workmen and idle factories. Our work is to draw, from this teeming hive of industry, materials and implements of war, to find our own men to employ them against the enemy, and to furnish them to our Allies across the water. To this end our industries have for months been under close and expert study and the authorities are fairly well informed as to where they can go for what is needed, in materials and men. Nothing gives us greater cause for pride at this time than to see how our captains of industry, our engineers, our chemists, our trained men in all walks of life, have crowded to the support of the Government, a Government of the people which can work with the people.

If we take a cursory review of our stock we can see in a measure what lies before us, the places where there can be no strain, and the places where our duty calls upon us to make the strain as great as can be borne.

A War of Steel.

We learned long ago that it is a war of steel. At the moment the war started about 45% of the world's 76,000,000 tons of steel making capacity was neutral and about 55% was at war, almost equally divided between the two sides. Through various changes in the

alignment, and through increases in production in some countries and decreases in others, production before the United States entered the war had reached a rate of about \$5,000,000 tons a year, divided roughly as follows: Entente Allies, 17,500,000 tons; Central Powers, 21,750,000 tons; United States, 45,000,000 tons; other neutrals, Sweden, China, etc., 750,000 tons. The neutral that has now entered the war lays down on one side a greater tonnage than had been employed on both sides. Less than one per cent of the world's steel is now neutral and the proportion against the Central Powers is almost three to one.

Our spelter capacity is fully two-thirds as great as the world's production before the war. The generous offer of our copper producers to the Government involved a quantity, for Government needs over a twelvemonth, less than 2½% of our own production last year.

The Real Problem.

Clearly we have no problem as to the making of the crude steel or metals in unwrought form. We have an abounding supply. It is what we can fabricate, to apply to the use of war, that will constitute the real problem. The industries that consume the steel and metals for the continuance of our regular daily

work will not feel much greater pinch than they may already have felt, except as the supply in certain particular forms will be diminished. So great are the ramifications of steel and metal consumption, and so restricted and crowded are nearly all of the channels through which the crude materials flow, that the pinch will undoubtedly be very severe in many instances, and there will lie the burdens to be borne by those not engaged directly in war work. The Government needs steel plates and the full plate rolling capacity was already engaged in a feverish effort to convert steel into every ton of plates possible. Enormous supplies of tin plate can be used, to preserve crops that will be planted in much greater acreages than ever before, and some consumers of plates and tin plates will have to wait. These are but two instances of some that are clearly seen while many others will be seen as the work progresses.

Sound in our industries, our finances and our love of country and freedom, we have but to practice efficiency to put all our effort where it will best serve the end, energy to do all that we can and frugality to give our Allies all that can be spared, to bring the war to the early and successful conclusion for which we have pledged our lives, our hearts and our wealth.

Business Trends.

Commodity Prices Continue to Soar.

Many factors are responsible for the noteworthy strength that continues to characterize the commodity markets. What may be termed concentrated demand cannot be brushed aside in times like the present, when in a word, the United States is the principal providing nation of the world. Nor can farmers, who are unusually prosperous, be compelled to part with their products; they must be induced to do so at prices they deem attractive. In addition, one must not forget that congestion in railway traffic allows of speculative operations in spot supplies, which factor has undoubtedly buoyed prices for numerous commodities, and while the railways have made strenuous efforts to move essential articles, thus easing conditions somewhat, little relief from high prices is to be expected in immediate future.

In view of these facts it is not astonishing to find that the index numbers of both "Bradstreet's" and "Dun's" reach new high levels. "Bradstreet's" figure reflects an advance of 1.3% over February 1st, while showing a rise of 24.2% over March 1, 1916, 46% over that date in 1915 and exactly 60% over the corresponding time in 1914.

Comparing its latest number with the lowest one on record—on July 1, 1897—"Dun's" report shows that present prices represented \$261,627,000.

In the following table will be found a record of "Bradstreet's" and "Dun's" index numbers since January 1, 1916:

	1916.	1917.	1916.	1917.
	Bradstreet's.		Dun's.	
Jan.	10.9163	13.7277	137.666	169.562
Feb.	11.1415	13.9427	142.260	176.273
Mar.	11.3760	14.1360	142.110	186.244
Apr.	11.7598		145.690	
May	11.7485		146.197	
June	11.6887		145.397	
July	11.5294		145.142	
Aug.	11.4414		143.930	
Sept.	11.7803		152.018	
Oct.	12.0399		152.355	
Nov.	12.7992		164.840	
Dec.	13.6628		168.090	

Many New Enterprises in March.

What emphasizes the continued activity in the business world are the March returns of incorporations in the Eastern States for companies with a capital of \$1,000,000 or over, which represented \$281,000,000. While this total is slightly under that of February, it is considerably larger than the output in March a year ago, when incorporations involved \$194,750,000. Two years ago the total was only \$70,050,000. The grand total of all companies chartered with a capital of \$100,000 or over, covering all States, amounted to \$420,367,000. This is the best showing in quite a while. It compares with \$350,509,500 in February. In March a year ago the papers filed for new enterprises represented \$261,627,000.

Following are the comparative figures as specially compiled by The Journal of Commerce and Commercial Bulletin of companies incorporated in the Eastern States during the last three years, with an authorized capital of \$1,000,000 or more:

	1917.	1916.	1915.
Jan.	\$244,450,000	\$270,995,000	\$51,150,000
Feb.	283,815,000	365,995,300	53,950,000
Mar.	281,000,000	194,750,000	70,050,000
Total	\$809,265,000	\$731,650,300	\$175,150,000
	1916.	1915.	
Apr.	166,650,000	32,200,000	
May	209,735,000	78,950,000	
June	264,350,000	181,247,100	
July	217,662,000	71,100,000	
Aug.	113,472,000	67,100,000	
Sept.	164,700,000	286,625,000	
Oct.	303,768,700	208,695,000	
Nov.	260,407,800	190,075,000	
Dec.	230,850,000	135,125,000	
Total	\$2,708,326,500	\$1,426,267,100	

Iron Output Shows Heavy Increase.

It is gratifying, at a time when important government requirements are impending, to witness an appreciable recovery in pig iron production. Having fallen off sharply in February through lack of fuel, it was expected that the output would re-

Business Trends.

gain the lost ground as soon as the car movement bettered, and in March 3,250,757 tons were produced, according to "The Iron Age". This is at the rate of 104,863 tons daily and is the highest reported since last November, when 110,394 tons were shown. With a freer supply of coke, furnaces which had previously blown out were able to resume and there was a net increase of 15 for the month, 331 being active on April 1st, with an estimated capacity of 107,706 tons a day.

The accompanying table gives the production of coke and anthracite pig iron in the United States by months since January 1, 1915, as reported by the Iron Age: 1915. 1916. 1917.

January	1,601,421	3,185,121	3,159,938
February	1,674,771	3,087,212	2,645,247
March	2,063,834	3,337,691	3,250,757
April	2,116,494	3,227,768	
May	2,263,470	3,361,073	
June	2,380,827	3,211,588	
July	2,563,420	3,224,513	
August	2,779,647	3,203,713	
September ..	2,852,561	3,202,366	
October	3,125,491	3,508,849	
November ..	3,037,308	3,311,811	
December ...	3,203,322	3,178,647	
Total	29,662,566	39,039,356	

Decline in Foreign Trade.

The effect of the submarine embargo on our February foreign trade may be partly measured by the declines in exports of \$147,000,000, or 23%, and in imports of \$42,000,000, or 17%, as compared with January. The latter month was, however, a record period in export trade, and February was, furthermore, a short month. If comparison is made with February a year ago, it is found that exports this year were \$65,000,000, or 16% greater, while our imports were \$5,600,000, or 3% larger.

The exports for the eight months ended February, 1917, were \$4,080,695,942, while for like periods in 1916 and 1915 the totals were \$2,584,682,726 and \$1,634,466,017, respectively. Imports for the eight months ended February, 1917, were \$1,547,931,578, and \$1,291,072,933 in 1916 and \$1,055,631,627 in

1915. The excess of exports over imports in February was \$266,946,437, and for the eight months' period ended with February was \$2,532,764,364.

Our foreign trade for February and eight months compares as follows:

February	1917.	1916.
Exports	\$466,523,034	\$401,783,974
Imports	199,576,597	193,935,117
Excess of exports	\$266,946,437	\$207,848,857

Eight months ended February 28th:

	1917.	1916.
Exports	\$4,080,695,942	\$2,584,682,726
Imports	1,547,931,578	1,291,072,933
Ex. of exports.	\$2,532,764,364	\$1,293,609,793

Summary of trade since the war began:

31 months	Exports.	Imports.
Merchandise.	\$11,028,700,378	\$5,260,183,106
Gold	314,259,101	1,264,963,924
Silver	143,071,403	76,778,022
Total	\$11,486,030,882	\$6,601,927,051

Commercial Failures.

With business continuing remarkably active and profitable, the country's commercial failures remain relatively moderate, insolvencies reported to "Dun's Review," during the first quarter of 1917, exclusive of banks and other fiduciary suspensions, numbering 3,937 and supplying liabilities of \$52,307,099. This is the best numerical exhibit for the period since 1910, when there were 3,525 failures, and the sum of money involved is smaller than in all years back to 1909, which disclosed an indebtedness for the first three months of about \$44,500,000. The present figures contrast with 5,387 defaults for \$61,492,746 last year; 7,216 for \$105,703,335 in the opening quarter of 1915—the maximum point on record—and 4,826 reverses in 1914 for \$83,221,826.

In the following table is given the number of failures by months for the first quarter during recent years; also the liabilities this year:

	1917.	1916.	1915.	1917.
	Number			Liabilities.
Jan.	1,540	2,009	2,848	\$18,283,120
Feb.	1,165	1,688	2,278	10,617,883
March ..	1,232	1,690	2,090	17,406,096
1st quar.	3,937	5,387	7,216	\$52,307,099

Government Requirements and the Steel Market.

Consumers of steel everywhere are anxious to know how much the deliveries of their steel are going to be set back by reason of the filling of rush orders for the United States Government. Of course no one can make any estimate. The steel manufacturers themselves have no idea. The spirit and the manner in which government requirements in steel are being taken care of at this time by the American steel trade are characteristically American. Steel men think quick, or they would have been out of the business long ago, and they have been fully alive to the need for rapid preparation for war. The Honorable secretaries of the war and navy departments have not had to argue with them. With regular American abandon they have felt that when the filling of other orders had to be put off they might just as well make a clean sweep, and many a stand of rolls has been simply turned to government work, to roll the entire order before anything else is thought of. In many cases no doubt the rolling of the material could have been strung out over a period but the steel producers are game and want to show the best they can do. When any part of a capacity to roll nearly three million tons of finished steel a month is subject to the nod of the government officials, it is going to be quick work getting all the fabricating and other shops filled with all the steel they can handle. It is not a case of keying up the industry. It is already keyed up, and the only thing is to change rolling schedules, which can be done with a stroke of the pencil. As a rule the material is such as the mills are fitted to roll.

We are convinced that at this time

steel is being made by the steel mills fully as fast as it can possibly be worked up for the various items required by the government, and our opinion is that the work has been taken up with such enthusiasm that production is proceeding more rapidly, in many cases, than is really requisite, the error being made on the safe side.

As to deliveries of steel on old orders to regular domestic consumers there are two points. In the first place, the dislocation of rolling schedules, and other readjustments, are such that the total production of steel may possibly be curtailed somewhat, but this curtailment cannot amount to much, particularly as the manufacturers are aided in various ways as to securing their raw materials.

In the second place, the production of steel required by the government has been taken up so promptly, and is being prosecuted with such vigor, that the supply is likely soon to outrun the possibilities of the shops that are to work it up. Probably a time will soon be reached at which the supplies will be such as to dictate a slowing down in the production of this steel. There are cases of mills being put on a run of a very few days to roll a certain description of steel when the shops that are to work it up will require as many weeks to finish their jobs. Thus the amount by which deliveries of certain descriptions of steel to ordinary domestic consumers are slowed down is not necessarily a measure of the rate at which they can expect to receive steel over, say, the next three or six months. The deliveries may easily begin to improve soon.

What is the Normal Price of Copper?

Bernard M. Baruch, the member of the Council of National Defense who arranged the purchase of 45,510,000 pounds of copper for account of the Government at 16.67c per pound, has explained how the matter was handled.

He says that with the Government's need in mind, he sought out John D. Ryan, President of the Anaconda Copper Mining Company, and Daniel Guggenheim, President of the American Smelting and Refining Company. He told them that he thought the copper producers and sellers ought to fall in with the movement to help the preparedness program. Mr. Baruch asked them if they would get the copper men together to discuss the matter.

"That is not necessary," replied Messrs. Ryan and Guggenheim promptly. "The matter is settled. We will see to it that you get your metal at the average price for which it sold before the war boosted prices."

"That," said Mr. Baruch yesterday, "was the extent of the persuasion it was necessary to use to get big business back of the Government in preparing for war. Those two men deserve all the credit. Any one who tries to squeeze the United States to make easy profits is going to have trouble. The big business men are going to help the country, and they are going to do it as a patriotic duty, not to make money."

The copper producers have done a very fine thing in voluntarily conceding to the Government 15.50c per pound from the present market price of copper and as we said yesterday they are to be highly commended for acting in this public spirited manner.

There is, however, one phase of this matter that deserves comment and that is whether this price of 16.67c really represents a normal price for cop-

per. Mr. Baruch quotes the producers as saying: "We will see to it that you get your metal at the average price for which it sold before the war," which means the prices ruling prior to August 1, 1914. We therefore give below our American Metal Market's annual averages of prompt Electrolytic copper since 1900.

Annual Averages.

1900	16.54½	price maintenance period
1901	16.40	" " "
1902	11.96½	" " "
1903	13.62	" " "
1904	13.11	" " "
1905	15.98	" " "
1906	19.77½	general business boom
1907	20.86	" " "
1908	13.39	" " "
1909	13.11	" " "
1910	12.88	" " "
1911	12.55	" " "
1912	16.48	" " "
1913	15.52	" " "
1914	13.32	" " "
1915	17.47	European war demand
1916	28.46	" " "

17 year

Average 15.96½c

This period includes nine years of exceptionally prosperous times for the copper industry, namely 1900-1-5-6-7-12-13-15-16, and therefore it cannot be said that the grand average for the 17 years is an accurate guide as to the normal price of copper. We believe, to arrive at a normal price, we could not do better than to take the average for the ten years ending 1913 which figures out 15.36c. This period includes several years of prosperity, a few years of depression and several years of ordinary conditions. It leaves out the low prices in 1914 caused by the outbreak of the war and the unduly inflated prices in 1915 and 1916 due to the war demand.

However if our readers believe there is any other ten year period which

should be taken in preference to the one we have mentioned they will find the averages given below.

Ten Year Averages.

10 years ending	1909	15.47 ¹ / ₂
" "	1910	15.11
" "	1911	14.72
" "	1912	15.17 ¹ / ₂
" "	1913	15.36 ¹ / ₂
" "	1914	15.39
" "	1915	15.53 ¹ / ₂
" "	1916	16.40 ¹ / ₂

It is more than a coincidence that in six out of these eight ten-year periods that the average was between 15.11c and 15.53c and we believe that the normal price can be said to come within these limits. There is no more reason to take the average of the ten years ending 1916, which included two years of war prices, than there would be in taking the seven years ending 1915, which were presented last August by

Walter Douglas, vice-president of Phelps, Dodge & Company, in his discussion of the copper quotations that appeared in a certain mining journal.

Mr. Douglas stated that the actual prices realized by Phelps, Dodge & Company during these seven years were as follows:

1909	13.02c
1910	12.83
1911	12.36
1912	15.50
1913	15.35
1914	13.56
1915	16.05

Average 14.09c

To sum up we believe the normal price of copper can be said to be between 15.00c and 15.50c, the market dipping well under this in poor times and advancing above it when there is an exceptional demand.

The Motive Power Situation.

It is quite obvious that the railroads have not been increasing their motive power in the past three years as they should have done in order to maintain their relation to the needs of the country, based on the normal rate of expansion. Some data bearing on this subject may be of interest. The Railway Age Gazette's statistics of locomotive production in the United States and Canada are as follows:

1906	6,952
1907	7,362
1908	2,342
1909	2,887
1910	4,755
1911	3,530
1912	4,915
1913	5,332
1914	2,235
1915	2,085
1916	4,075

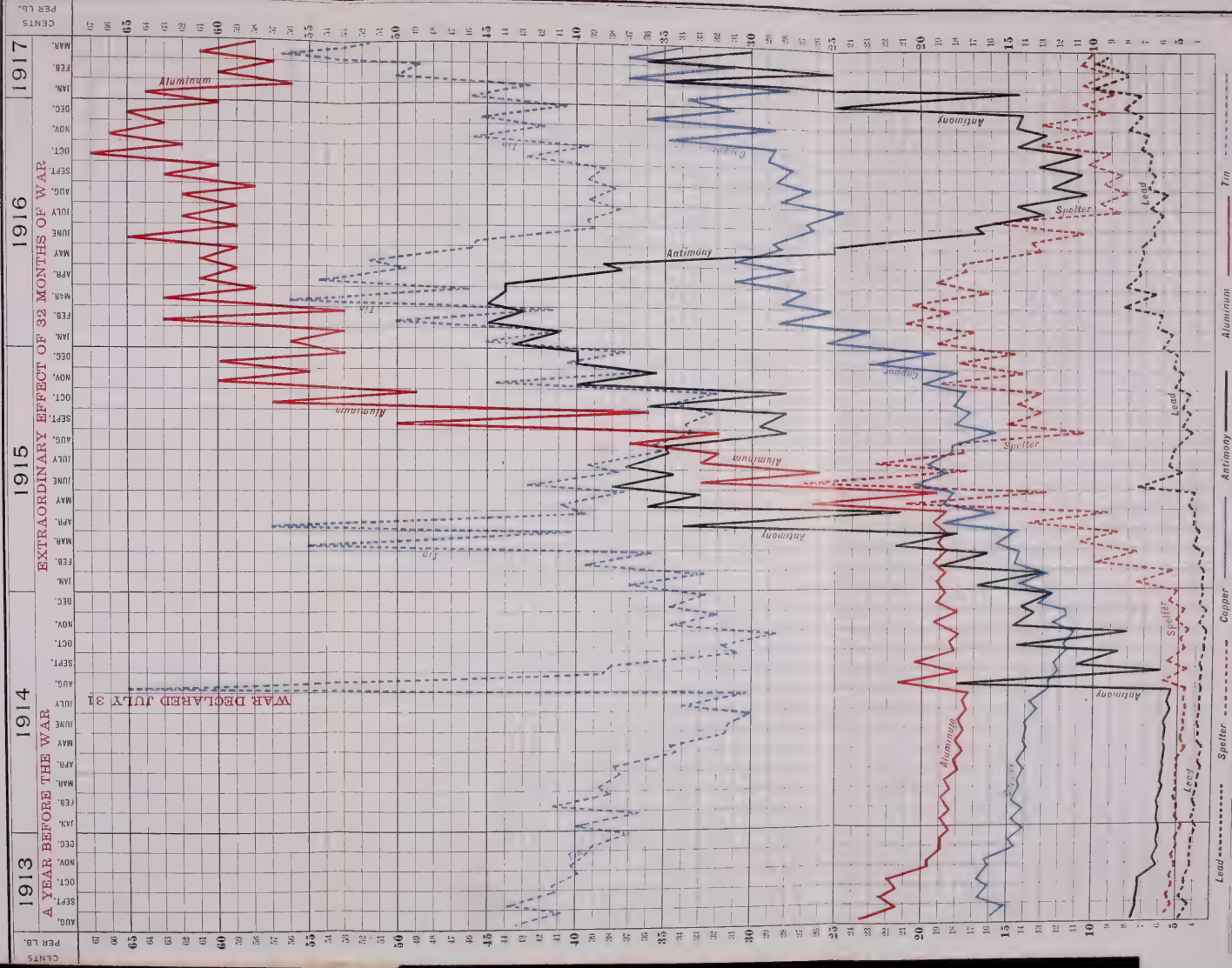
June 30, 1905, the number of locomotives on the steam roads of the United States was 49,616. June 30, 1915, the latest time for which there is a report, the number was 65,835. In the ten years 1906 to 1915 inclusive, the num-

ber of locomotives furnished the railroads of the United States, using the production figures given and deducting estimates of exports and the Canadian output, was about 35,000. The increase in the number of locomotives in service was about 16,000, indicating that about 19,000 locomotives were scrapped, or 38% of the number in existence at the beginning of the period, while the figures also suggest that fully half, or more than half, of the locomotives in service June 30, 1915, were less than ten years old. Apparently the railroads concluded that they were well fixed with locomotives. There were 729 locomotives exported in 1916, and allowing for Canada it would appear that about 3,000 additional locomotives were placed in service in the United States. Probably as many were abandoned, in which event the only increase in tractive power was due to the new locomotives being larger than those abandoned. With 65,000 locomotives in service, 3,250 per year would be required to maintain the number, provided the average life is 20 years.

STEEL AND METAL MONTHLY DIGEST

New York, April, 1917

Extreme Price Fluctuations Since War Commenced.
COPPER - TIN - LEAD - SPELTER - ANTIMONY - ALUMINUM
 Plotted according to the monthly highest and lowest prices of Electrolytic Copper, Straits Tin, Aluminum (98-99%), Antimony (Chinese and Japanese grades) at New York and Pig Lead and Prime Western Spelter at St. Louis.



The Adamson Law Decision.

Hats off to a long list of English kings from John of Magna Charta down! Charles I. lost his head because he tried to take a step backward, and others their jobs, but they were the exceptions. The English throne has been preserved. Its present occupant is satisfied that he holds it on the tenure he does; so are the people of England. Where is the King of France, the Emperor of China, the Czar of Russia? Apropos the United States Supreme Court's decision in the Adamson law case.

The Supreme Court decides that the rights of the public to the public services the railroads are fitted to render are superior to the interests of either the employes or the owners of the railroads. The representatives of the people have the right to legislate as an act of compulsory arbitration, in case of a dispute, and the employes have no right to strike. The rights of the people are supreme. Thirty years ago Congress decreed that railroad rates should be just and reasonable. If rates are not just to the railroads under conditions decreed by the Adamson law, the means for remedying the situation are provided.

The interpretations furnished us of the charter of our liberties have not always been right, just as Charles I. was not right in the way he looked at Magna Charta. Our Supreme Court was wrong in the Knight Sugar Trust decision of some 23 years ago. It set the rights of property above the rights of the people. What would be the rights of the people if merchandizing or speculating were ignored if property in plants were involved. Theodore Roosevelt criticized the decision and was himself criticized, but he led the people and in due course the rights of the people were recognized.

Popular feeling is like a pendulum, which it should not be, and therefore it sometimes swings too far. "Just and reasonable" railroad rates involved re-

ductions because those were needed to make the rates just and reasonable. Owners of property have been depending upon the letter of the law to preserve their rights. The kings of England who depended upon Divine Right lost. So will property if it depends on the letter of the law. If it depends on the spirit of fair play of the American people it will in the long run be preserved, but popular feeling, being like a pendulum, swings too far.

What then? Congress is supreme, and most of the people are ashamed of their Congress. An individual may die before he sees his duty. So may even a people, but usually not. Those who think quickest and clearest should use every effort to bring the people as rapidly as possible to the realization of their duty. When men have influence and votes why should they continue a condition in which they are ashamed of their representatives? If the conditions created by the operation of the Adamson law involve an advance in railroad rates to make them just and reasonable to the owners of railway property those advances should promptly be authorized.

The tyranny of monarchs has resulted in the establishment of democratic forms of government by people who were not yet really able to govern themselves. The tyranny of property could likewise force a people to declare for socialism when they were really not ready to practice socialism in such manner as would really benefit them. There is no nation to-day whose individuals are fitted to practice socialism to their spiritual or physical well being. The nation will fare best that grants individual liberties as the individuals become fitted to enjoy them in succession and thus the path to socialism may be avoided as long as socialism is not the best thing for the people. Let this nation strive to defend itself from that recourse.

Steel Corporation Tonnage and Earnings.

In the diagram on the opposite page are plotted the United States Steel Corporation's tonnage and earnings for the 15 calendar years of its existence. Prior to 1908 only the tonnage as to production was given. In 1908 and subsequent years the shipments were also given, and divided as between domestic and export. The aggregate shipments during the nine years thus given equal the aggregate of production reported in the same period except for a slight divergence attributable to change in the amount of stock. The earnings per ton for the first six years are necessarily computed on the basis of the production reported, making a showing amply accurate for the purpose, the earnings per ton for the last nine years being computed upon the shipments.

The Steel Corporation's shipments are, of course, shipments of products to customers outside the organization, no intercompany business being included. The shipments are regular steel products, including billets and sheet bars, wire rods, and various finished products. When it comes to these totals, the "ton" is a conventional ton, for the reason that wire and products of wire, also finished structural work, are included as net tons, all other products being taken in gross tons. There are some shipments of pig iron, ingots, spiegel, ferromanganese and scrap, amounting to a relatively small total, that are not included.

The following table shows, approximately, the exports of the United States

of steel products corresponding in general with the steel exports of the corporation, which are given as stated in the corporation reports. The exports given as by the United States are the commonly reported iron and steel exports, less the exports of pig iron, scrap, bar iron and castings, products not made by the Steel Corporation and therefore properly eliminated for the purpose of comparison. The decrease in the Steel Corporation's percentages in 1916 is of particular interest. Prior to the war the exports of independents were confined largely to Canada, but with the war exporting steel was made easy by the buyer offering New York funds against vessel bill of lading, and eventually, in many cases, against railroad bill of lading. The fact that the exports of the United States are entirely in gross tons, while the small proportion of Steel Corporation exports of wire products and fitted structural work is taken as net tons, does not appreciably affect the comparison.

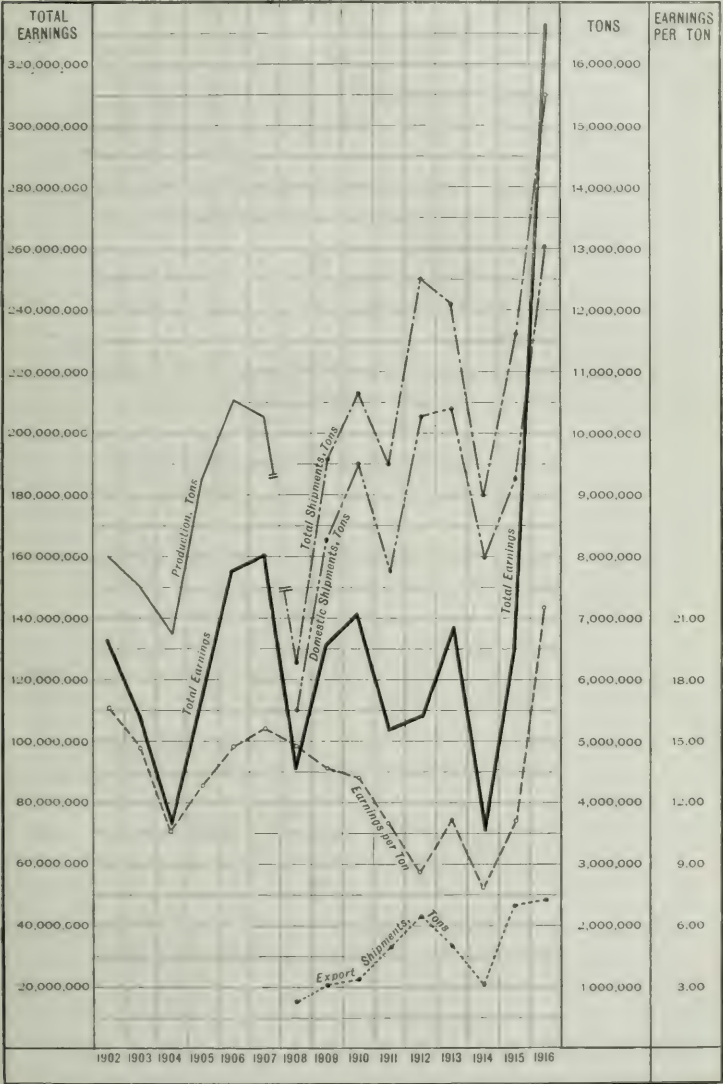
Exports, Tons.

	United States.	Steel Corporation.	Per cent.
1908 ..	887,508	777,276	88
1909 ..	1,128,890	1,001,157	89
1910 ..	1,264,434	1,216,057	96
1911 ..	1,967,324	1,719,272	88
1912 ..	2,531,131	2,233,570	88
1913 ..	2,323,632	1,756,328	75
1914 ..	1,387,296	1,096,234	79
1915 ..	3,123,820	2,350,524	75
1916 ..	5,131,261	2,466,793	48

The figures from which the diagram on the opposite page is plotted are given below.

	Total earnings.	Production, tons.	Earnings Per ton.	
1902	\$133,308,764	8,033,556	\$16.59	
1903	109,171,152	7,458,879	14.64	
1904	73,176,522	6,792,780	10.77	
1905	119,787,658	9,226,386	12.98	
1906	156,624,273	10,578,433	14.81	
1907	160,964,674	10,376,742	15.51	
Domestic shipments. Export shipments.				
1908	91,847,711	5,505,090	777,276	14.62
1909	131,491,414	8,690,133	1,001,157	13.57
1910	141,054,755	9,511,694	1,216,057	13.15
1911	104,305,466	7,740,897	1,719,272	11.03
1912	108,174,673	10,299,890	2,233,570	8.63
1913	137,181,345	10,412,430	1,756,328	11.27
1914	71,663,615	7,982,325	1,096,234	7.89
1915	130,396,012	9,331,363	2,350,524	11.16
1916	333,574,178	13,075,295	2,466,793	21.46

Tonnage and Earnings Since Organization.



U. S. Steel Corporation Report.

The Steel Corporation's earnings in 1916 were known approximately last January, when the statement for the fourth quarter was presented. The pamphlet report now issued gives the final figures, containing an adjustment of some \$50,000. From the purely trade standpoint perhaps the most interesting news in the pamphlet report is the production, as hitherto there has been nothing but such estimates as trade authorities could make. Our own estimate, as given in our annual Metal Statistics (page 155), was 15,200,000 tons, of "steel products for sale." The exact figure proved to be 15,460,792 tons, so that our estimate was out by 1.7%. Production, earnings and earnings per ton are given in the following table:

	Total earnings.	Steel Products for sale.	Average per ton.
1902 ...	\$133,308,764	8,033,556	\$16.59
1903	109,171,152	7,458,879	14.64
1904	73,176,522	6,792,780	10.77
1905	119,787,658	9,226,386	12.98
1906	156,624,273	10,578,433	14.81
1907	160,964,674	10,376,742	15.51
1908	91,847,711	6,206,932	14.80
1909	131,491,414	9,859,660	13.34
1910	141,054,755	10,733,995	13.14
1911	104,305,466	9,476,248	11.01
1912	108,174,673	12,506,619	8.65
1913	137,181,345	12,374,838	11.09
1914	71,663,615	9,014,512	7.95
1915	130,396,012	11,762,639	11.09
1916	333,574,178	15,460,792	21.58

It may be estimated that earnings increased from \$14.50 per ton in January to \$30.50 per ton in December, while, of course, they are still larger now. In the circumstances it is not worth while to consider earnings in 1916 as a whole, seeing how greatly conditions changed during the year.

The Corporation's bookkeeping, while necessarily intricate, presents one clearly seen and important feature. Although the earnings in 1916 were more than double those of any previous year, not a cent was appropriated from surplus earnings for improvements, the

whole \$201,835,585 left after charges and dividends being passed to surplus. In years when the earnings were much less than half as much tens of millions of dollars have been so appropriated. The expenditures were large just the same, some \$65,000,000 chargeable to capital account. This does not all stay, as there are some deductions against depreciation accounts, etc., but the property account on the balance sheet is increased by some \$50,000,000, while on the other side the surplus is increased by more than \$200,000,000. The balancing is done chiefly by increases in the sinking and reserve fund assets and in the current assets, both accounts being largely increased during the year. The cash, apart from some \$10,000,000 in sinking and reserve fund assets, increases from \$94,083,805 to \$148,394,761. Five years earlier the corporation's cash was at a low point, \$43,500,000, and it was the understanding that bonds issued against previous new construction were partly for the purpose of maintaining the cash account. Apparently the purpose of the Finance Committee in refraining from making specific appropriations from the surplus earnings of 1916, amounting to one-fourth more than the entire earnings in any previous year, was to keep the accounts open for the clearer vision of the future that can be obtained when the war is over. The total book surplus, exclusive of intercompany profits, is now \$381,360,913, having more than doubled in a year.

On the basis that the corporation worked at capacity during the year, its average capacity, in steel products for sale, is indicated to have been 50,000 tons a day. Our estimates of shipments during the year ranged from 90% in July to 106% in October, the variations being due chiefly to weather conditions, while the average of the twelve monthly percentages came out at 100%. Thus 50,000 tons is to be taken not as a nominal capacity but as a real average capacity. At present, of course, the capacity is somewhat greater.

Comparative Income Account.

	1916.	1915.
EARNINGS —Before charging interest on Bonds and Mortgages of Subsidiary Com- panies.		
First Quarter	\$ 63,110,720.27	\$ 15,082,369.36
Second Quarter	83,501,065.24	30,536,467.71
Third Quarter	88,159,733.30	41,050,432.47
Fourth Quarter	108,225,573.63	53,580,796.79
Total for year	\$342,997,092.44	\$140,250,066.33
Less, Interest on outstanding Bonds and Mortgages of Subsidiary Companies .	9,422,914.94	9,854,054.69
Balance of Earnings	\$33,574,177.50	\$130,396,011.64
Less Charges and Allowances for Depre- ciation applied as follows, viz.:		
To Depreciation and Extraordinary Re- placement Funds and Sinking Funds on Bonds of Subsidiary Companies	32,762,072.38	25,962,164.59
To Sinking Funds on U. S. Steel Corpora- tion Bonds	6,785,540.27	6,465,884.26
Net Income in the year	\$294,026,564.85	\$97,967,962.79
Deduct:		
Interest on U. S. Steel Corporation Bonds outstanding	21,602,852.90	21,928,633.74
Premium paid on Bonds redeemed, viz.:		
On Subsidiary Companies' Bonds....	146,277.11	107,210.28
On U. S. Steel Corporation Bonds....	870,673.57	864,100.00
Balance	\$271,406,761.27	\$75,068,018.77
Add: Net Balance of sundry charges and cred- its, including adjustments of various accounts	124,969.11	765,813.94
Balance	\$271,531,730.38	\$75,833,832.71
Dividends on U. S. Steel Corporation Stocks, viz.:		
Preferred, 7%	25,219,677.00	25,219,677.00
Common:		
1916, Regular 5%, Extra 3 $\frac{3}{4}$ %		
1915, 1 $\frac{1}{4}$ %	44,476,468.75	6,353,781.25
Surplus Net Income for the year .	\$201,835,584.63	\$44,260,374.46

Production.

IRON ORE MINED	1916.	1915.
In the Lake Superior Region	Tons.	Tons.
Missabe Range	24,928,039	17,209,664
Vermilion Range	1,314,002	1,273,825
Gogebie Range	2,369,460	1,277,419
Menominee Range	996,983	939,304
Marquette Range	647,132	618,108
In the Southern Region		
Tennessee Coal, Iron & R. R. Co.'s Mines	3,099,553	2,351,356
Total	33,355,169	23,669,676

U. S. STEEL CORPORATION

Production (Continued).

LIMESTONE QUARRIED	7,023,474	5,795,925
COAL MINED		
For use in the manufacture of coke.....	26,606,041	20,800,204
For steam, gas and all other purposes	6,162,340	5,828,278
Total	32,768,381	26,628,482

COKE MANUFACTURED

In Bee-Hive Ovens	12,479,160	9,701,692
In By-Product Ovens	6,422,802	4,799,126
Total	18,901,962	14,500,818

BLAST FURNACE PRODUCTION

Pig Iron	17,412,049	13,517,598
Spiegel	31,486	7,175
Ferromanganese and Silicon	164,102	116,735
Total	17,607,637	13,641,508

STEEL INGOT PRODUCTION

Bessemer Ingots	7,273,766	5,584,198
Open Hearth Ingots	13,636,323	10,792,294
Total	20,910,589	16,376,492

ROLLED AND OTHER FINISHED STEEL PRODUCTS FOR SALE

Steel Rails (Heavy and Light Tee and Girders)	1,533,681	1,129,832
Blooms, Billets, Slabs, Sheet and Tinplate Bars	1,881,526	1,404,443
Plates	1,332,262	974,741
Heavy Structural Shapes.....	1,029,682	726,082
Merchant Steel, Bars, Hoops, Bands, Skelp, etc.	2,715,277	2,118,366
Tubing and Pipe	1,338,892	919,280
Wire Rods.....	278,197	261,036
Wire and Products of Wire	2,004,494	1,771,945
Sheets (Black and Galvanized) and Tin Plates	1,786,642	1,368,178
Finished Structural Work	557,953	476,896
Angle Splice Bars and All Other Rail Joints ..	277,271	190,758
Spikes, Bolts, Nuts and Rivets	95,096	74,289
Axles	173,530	95,476
Steel Car Wheels	107,167	77,569
Sundry Steel and Iron Products	349,122	173,748
Total	15,460,792	11,762,639

Spelter	55,898	32,031
Sulphate of Iron	46,263	35,377
	Bbls.	Bbls.
Universal Portland Cement	10,425,600	7,648,658

Domestic Shipments.

	1916. Tons.	1915. Tons.
Rolled Steel and Other Finished Products	13,075,295	9,331,363
Pig Iron, Ingots, Spiegel, Ferro and Scrap	524,885	543,193
Iron Ore, Coal and Coke	1,172,958	1,004,323
Sundry Materials and By-Products	160,483	103,869
Total tons all kinds of materials, except Cement .	14,933,621	10,982,748
Universal Portland Cement (Bbls.)	10,861,426	8,176,583

Export Shipments.

	1916. Tons.	1915. Tons.
Rolled Steel and Other Finished Products	2,466,793	2,350,524
Pig Iron, Ingots and Scrap	32,636	78,244
Sundry Materials and By-Products	2,198	971
Total tons all kinds of materials	2,501,627	2,429,739

Total Value of Business.

	1916.	1915.
Covering all of the above tonnage.		
Domestic	\$702,801,167	\$391,188,661
Export	150,463,290	95,163,393
Total	\$853,264,457	\$486,352,054

Employees and Pay Rolls.

The average number of employees in the service of all companies during the year 1916, in comparison with the year 1915, was as follows:

Employees of	1916. Number	1915. Number
Manufacturing Properties	187,289	140,875
Coal and Coke Properties	25,143	19,485
Iron Ore Properties	12,624	9,668
Transportation Properties	24,189	18,240
Miscellaneous Properties	3,423	2,858
Total	252,668	191,126
Total salaries and wages paid.....	\$263,385,502	\$176,800,864
Average Salary or Wage per Employee per Day:		
All employees, exclusive of General Admin- istrative and Selling force	\$3.29	\$2.92
Total employees, including General Admin- istrative and Selling force	\$3.36	\$3.01

World Trade in 1916.

International commerce made its highest record in the year 1916. A compilation of the trade returns of the principal commercial countries of the world made by the National City Bank of New York indicates that the total international commerce of the world in 1916 aggregated approximately \$45,000,000,000 against \$40,000,000,000 in 1913, the former high record year. The total commerce of the United States alone was in 1916 \$7,873,000,000 against \$4,277,000,000 in 1913; that of Great Britain \$7,080,000,000 against \$5,764,000,000 in 1913; France \$3,913,000,000 against \$2,953,000,000 in 1913; Canada \$1,858,000,000 against \$1,095,000,000 in 1913; Japan \$937,000,000 against \$678,000,000 in 1913; while in many of the less important countries the 1916 figures are materially in excess of those of the former high record year of world commerce in 1913. Even these high record figures for the countries at war are approximately \$2,000,000,000 below the real total because of the fact that the merchandise imported by the Government for war purposes are not included in the official trade returns. In the United Kingdom alone the imports of merchandise for the government are estimated at over \$1,000,000,000, while the value of imports for the governments of other countries at war probably aggregated more than \$1,000,000,000.

In a few of the important commercial countries the trade of 1916 was less than that of the record year 1913, this being especially true of certain of the South American countries which made their highest import and export record in 1913. Even the Central Powers, which have been cut off from the general trade, have purchased largely from the immediately adjacent countries, and the exchanges between Germany, Austria-Hungary and Turkey have been very large, though the fact that most of this was on government account suggests that accurate records of these ex-

changes are not available at the present time, and may never be a matter of public record.

This increase in the total value of world international commerce does not necessarily mean an increase in the quantity of merchandise moved, since 1916 prices were far in excess of those by which the trade of 1913, the former high record year, was measured. The raw sugar imported into the United States, for example, cost in the country of production an average of 4.1 cents per pound in 1916 against two cents in the same countries in 1913. Clothing wool imported in 1916 cost in the countries of production an average of 28.9 cents per pound against 23.8 cents in 1913; and carpet wool 22.2 cents per pound against 15 cents in 1913. Cotton, of which we imported in 1916 \$37,000,000 worth from abroad, chiefly from Egypt, averaged 19.3 cents per pound in 1916 against 18.6 cents in 1913. Flax in 1916 cost in the country of production \$652 per ton against \$316 per ton in 1913; and hides of cattle in 1916 21.6 cents per pound against 18.3 cents in 1913.

This advance in prices of the merchandise entering international trade is also illustrated by figures of our own exports, the average value per bushel of wheat exported in 1916 was \$1.47 against 99 cents in 1913; copper in pigs, ingots, etc., 26 cents per pound in 1916 against 15.5 cents in 1913; pig iron \$25 per ton in 1916 against \$14.50 per ton in 1913; steel billets \$59.75 per ton in 1916 against \$21.74 per ton in 1913; and sole leather in 1916 39.7 cents per pound against 24.9 cents in 1913.

International commerce of the world amounted 100 years ago in 1916. \$1,500,000,000, in 1830 \$2,000,000,000, 1850 \$4,000,000,000, 1870 \$10,500,000,000, 1900 \$20,000,000,000, 1910 \$34,000,000,000, 1913 \$40,000,000,000, and in 1916 approximately \$45,000,000,000.

Schwab on Success in Steel and Business.

From a little book written by Charles M. Schwab, under title of "Succeeding With What You Have," and published by the Century Company we take the following:

Bethlehem's biggest asset is not its rolling mill plants, its gun shops, its armor works, its rail mills; it is the men who make up its enthusiastic organization. For more than 30 years I have been superintending manufacture of steel and my men at Bethlehem are the most energetic, competent and lovable young men with whom I have ever worked.

To no small extent the success of Bethlehem has been built up by our profit-sharing system. But coupled with this individual incentive is a corps loyalty, a friendly rivalry, without which no great business can reach the maximum production.

I love to appeal to the American spirit of conquest, of doing things better than any one has ever done them. There is nothing to which men respond more quickly.

Once when I was with Mr. Carnegie I had a mill manager who was finely educated, thoroughly capable and master of every detail. But he seemed unable to inspire his men.

"How is it that a man as able as you," I asked him one day, "cannot make this mill turn out what it should?"

"I don't know," he replied; "I have coaxed the men; I have pushed them; I have sworn at them. I have done everything in my power. Yet they will not produce."

It was near the end of the day; in a few minutes the night force would come on duty. I turned to a workman beside one of the red-mouthed furnaces and asked for a piece of chalk.

"How many heats has your shift made to-day?" I queried.

"Six," he replied.

I chalked a big "6" on the floor, and passed along without another

word. When the night shift came in they saw the "6," and asked about it.

"The big boss was in here to-day," said the day men. "He asked us how many heats we had made, and we told him six. He chalked it down."

The next morning I passed through the same mill. I saw that the "6" had been rubbed out and a big "7" written instead. The night shift had announced itself. That night I went back. The "7" had been erased, and a "10" swaggered in its place. The day force recognized no superiors. Thus a fine competition was started, and went on until this mill, formerly the poorest producer, was turning out more than any other mill in the plant.

Payment For Personal Production.

The Bethlehem profit-sharing system is based on my belief that every man should get exactly what he makes himself worth. This is the only plan I know of equally fair to employers and every class of employee. Some day, I hope, all labor troubles will be solved by such a system.

I am not a believer in large salaries. I hold that every man should be paid for personal production. Our big men seldom get salaries of over \$100 a week; but all receive bonuses—computed entirely on efficiencies and economies registered in their departments.

Approximately 80% of the 22,000 men in our plants come under the system. The only ones not included are certain kinds of day laborers, whose work is such that it does not fall readily into the scheme, and men in a few special or too-complex departments.

A mechanic is given a certain piece of work, and knows that the allotted time is 20 hours. Perhaps he has a regular wage of 40 cents an hour, irrespective of production. If he finishes in the 20 hours, he gets a bonus of 20%, bringing his total pay for the work to \$9.60. But if he does the work in 12 hours, he still receives the \$9.60, and is ready to tackle another piece of

work. He gets bonus pay on basis of the entire schedule time, regardless of actual time it takes him.

Any short cuts a man may devise or any unusual energy are thus capitalized into profit for him. With this stimulus, our men are always giving their best efforts and production per man in some departments has more than doubled.

We have complete schedules of time and bonus rates for many kinds of common labor, and our statistics show such labor has been averaging nearly 40% above the regular rate per hour. Such jobs as wheeling a wheelbarrow or handling a shovel have been put under profit-sharing system.

In some departments the work is such that time enters very slightly—in open-hearth work or treating armor plate, for example. Here we are more concerned with quality of the work. In these cases we give a bonus for quality, based on tests of the steel. If we had the regular system here, workmen might be tempted to hurry and a lot of steel would have to be thrown out.

In still other departments we give bonuses for efficiencies. If a man handles his machines so that item of repair is very low, or if he gets equal results with less than regular amount of fuel, he is paid accordingly. We try to take into calculation every element that depends on initiative, or originality, or energy, or manual dexterity.

In many departments we use \$1 as a unit cost standard. The manager or superintendent gets 1% of the reduction down to \$.95, 2% of the total from \$.95 to \$.90, 3% from \$.90 to \$.85, and so on. This holds out every inducement for economy and efficiency.

We say to the superintendent of blast furnaces, for example: "This is your normal operation cost, the amount we charge up. Everything you save from this standard cost you will share, and the more you make the more we will make."

Grace's Million.

If Mr. Grace, the president of Bethlehem, who made a million dollars last year, were working on salary, he would have been very well paid if he had got thirty or forty thousand dollars. But

I am delighted to see him make a million. If he had made two millions the corporation would have made that much more.

We have to have a very elaborate and costly statistical department, but it pays for itself a hundred times over.

There is a minimum wage below which no man's salary shall fall. But most of what each worker earns is made up of bonuses. If a man has not ambition enough to earn bonuses, he is not likely to remain with us long.

My employees are the best paid in the steel industry. Last year, from superintendents to boys, they averaged \$990.

Systems of general profit-sharing have certain disadvantages from which ours is free. One disadvantage is that the lazy man shares reward of the smart man's work. General systems give employees uniformly bigger wages in times of general prosperity and furnish a good excuse to reduce wages at other times.

My system, I believe, can be fitted to any branch of industry. A banker once told me there was no way it could be worked out for banks. I devised a system which has been put into successful operation in a dozen banks.

Profit-sharing works well almost anywhere. I use it in my own home. Not long ago expenses of running my New York house got exorbitant. I called in the steward and said: "George I will give you 10% of the first thousand dollars you save in house expenses, 25% of the second thousand, and half of the third thousand."

The expense of operating the house was cut in two.

Men are pretty keen judges of their employers. You cannot make workmen think you are interested in them unless you really are. The man who gets loyalty is the man who has, first of all, a reputation for fair dealing. Men gauge fair dealing quickly.

There has never been so much sentiment in business, so close a spirit of co-operation between employers and men. It is time for Americans to realize the falseness of the cry that we are a nation of money-grabbers. The difference between us and other nations is that

we know how to earn money, while they, in the main, know how to save it.

Since Capt. Jones's Day.

Whenever problems of managing men come to my mind I think of my old master, Captain W. R. Jones, the man who, Henry Bessemer said, knew more about steel than any other man in America.

Uneducated, unpolished, outspoken, old Captain Bill was one of the most magnificent leaders of men America has produced. Everybody who worked for him idolized him.

Captain Bill could never understand the chemistry of the steel business, just beginning to reform the old hit or miss program. I remember the first time the Pennsylvania Railroad specified that rails should be of a certain chemical composition. This alarmed the old captain. He had never heard such names as carbon and manganese.

"Charlie," he said to me one day, "this damn chemistry is going to ruin the steel business yet."

Once I wrote Mr. Carnegie about a rail mill we had designed at Braddock, and announced enthusiastically that when the mill was completed, it would roll over a thousand tons of rails a day.

"I see no objection to the amount you want to spend," Mr. Carnegie wrote back, "but I want to exact one promise, that you will never tell any one we were foolish enough to suppose this country would ever require a mill to make one thousand tons of rails a day."

Now, think of us, after this short time, making 12,000 to 15,000 tons a day!

In 1886 it fell to my lot to roll the first steel girder that ever went into a skyscraper. At that time the business promised little. But to-day more than five million tons are used annually for buildings. In 1901 I built the first steel railway car; now more than five million tons of steel a year are used.

Old Captain Bill Jones would never take the partnership Mr. Carnegie offered repeatedly. He said he didn't want the men to think he was sharing profits of the company. Mr. Carnegie declared he would always pay Captain Bill as much as the President of the United States was getting. And he al-

ways did.

The captain used to characterize Mr. Carnegie as a wasp that came buzzing around to stir up everybody. One hot day in early summer, Mr. Carnegie sought out Jones.

"Captain," he said, "I'm awfully sorry to leave you in the midst of hot metals here, but I must go to Europe. I can't stand the sultry summer in this country. You have no idea, captain, when I get on the ship and get out of sight of land, what a relief it is to me."

"No, Andy," flashed the captain, "and you have no idea what a relief it is to me, either."

Carnegie's Sharing of the Pie.

Mr. Carnegie was the first big American business man to inaugurate a real profit-sharing system. He was the epitomization of unselfishness. Perhaps the way in which he differed from many employers could be illustrated by calling up the picture of two boys about to feast. One says: "I have a nice pie. Come and watch me eat it." The other says: "I have a nice pie. Come, let's eat it."

Mr. Carnegie's personality would enthruse anybody who worked for him. He had the broad views of a really big man. He was not bothered with the finicky little things that trouble so many people. When he made me manager, Mr. Carnegie said:

"Now, boy, you will see a good many things which you mustn't notice. Don't blame your men for trivial faults. If you do you will dishearten them."

When I want to find fault with my men I say nothing when I go through their departments. If I were satisfied I would praise them. My silence hurts them more than anything else in the world, and doesn't give offence. It makes them think and work harder.

Many men fail because they do not see the importance of being kind and courteous to men under them. Kindness to everybody always pays for itself. And, besides, it is a pleasure to be kind. I have seen men lose important positions, or their reputations—which are more important than any position—by little careless discourtesies to men whom they did not think it was worth

while to be kind to.

There are a good many things to be considered in selecting men for important positions. One that I always take into account is their family relations. If a man's wife takes the part of a discreet helper, or co-director with him, he is that much the more valuable.

The women of the United States have more to learn about their husbands' money than the men have to learn about getting it. That is, men are getting more out of their earning capacities than their wives are getting out of managing the money which their husbands provide them.

Mrs. Schwab on Money and Work.

I can never express the wonderful help Mrs. Schwab has been to me from the very start. Not long ago, a group of men offered me a large sum, \$60,000,000, I believe, for half of Bethlehem. I told my wife about it that evening.

"This is a big sum," I said. "Half of what I have is yours. What shall we do? If we sell, your share, invested at 5%, will bring you an income of over \$100,000 a month for the rest of your life."

"We wouldn't sell for five times that," my wife said. "What would I do with the money? And what would you do without your work?"

I have seen more men fail in business through the attitude taken by their

wives in their younger days than from all the vices put together.

The question of recreation is being considered more in modern business than ever before. All men need periods of relaxation, changes of environment, mental rest. I never care how long a vacation any of my managers takes, provided that he has his end of the business up to the general level at the time he leaves, and so energized and systematized that it will stay there while he is away.

Travel broadens a man, if he keeps his eyes open. And he is sure to see many things which will help him in business. In Europe, several years ago, I went through some steel plants in Austria. Later I was talking with Emperor Francis Joseph.

"What can you find in our small and comparatively unproductive establishments to interest you?" asked the emperor. "when you have such large, splendid steel plants in America?"

"At least, Your Majesty," I replied. "I can see what to avoid."

Some of those nations across the Atlantic have very definite divisions of aristocracy. I have always believed that the aristocracy of any country should be the men who have succeeded—who have aided in upbuilding their country. If America is to have an aristocracy, let it be so builded. And our future will be safe.

Railroads Entitled to Rate Increase.

It is difficult to conceive that any fair-minded man should conclude that the railroads are not entitled to an advance in freight rates at this time. The railroads are petitioning the Interstate Commerce Commission for an increase, and ask that the advanced tariffs may become effective in 30 days instead of being suspended pending investigation. Apparently the increases asked are to be 15% for the eastern roads and 10 to 15% for the southern and western, coal, coke and ore being excepted. It is esti-

mated, we do not know how authoritatively, that the proposed increases would involve \$325,000,000 increase in revenue.

Let us see what \$325,000,000 added revenue would cover. There is no question that the railroads need at the very least 1,000,000 tons of rails a year for replacement alone. They ought to have, for a few years at least, not less than 150,000 new freight cars a year. To provide only a small annual increase in the number of locomotives they should

not buy less than 4,000 a year. These are very conservative estimates. Rails are up \$10 a ton from the price obtaining for 15 years. Freight cars are up say \$1,400 over the average paid for several years. Locomotives are probably up by \$10,000 a year. These increases amount to \$260,000,000. The wage-advance just made is estimated at \$60,000,000, which makes a total of \$320,000,000. The railroads mention greatly increased cost of many other items, as well as increases in taxes. These could not be paid out of the \$325,000,000, as the four items exhaust the sum.

Practically everything but railroad rates has greatly advanced. It is not a theory, it is a condition that must be accepted. It is unfortunate that the value of the dollar should so greatly depreciate but the fact is that it has done so and the railroads should not be made to suffer from the chance that there are means to hold their rates down when means have been lacking to hold other things down. There is no prospect of a return to ante bellum values for many years after the war. If there are those who believe otherwise, let us have it out with them. American business needs to know and the sooner the question is threshed out the better. We do not

think opinion is at all equally divided on this subject, but if it is, the discussion should be made the order of the day. It is vitally necessary to know all that can be known.

As to finding money for railway investment, conditions have changed sadly for the worse. Money commands much higher rates of interest. The war loans of the Entente Allies yield about 6%, an unheard-of rate for a bond at all safe, and between railroad bonds at their rate and war bonds at theirs the great majority of the public seems to choose the latter.

The United States has been made richer by the war, through the large favorable trade balance, but instead of that trade balance helping the railroads the influence has been in precisely the opposite direction. The balance has been settled by gold, by American securities returned and by foreign securities held here. The influx of gold has helped to raise prices of the things the railroads buy, while the securities of both classes have tended to restrict the field for new railroad flotations. Everything that has occurred except the increase in traffic has given the railroads a setback. They need relief, in large measure and speedily.

Industrial War Measures in England.

Four thousand eight hundred and seventy-five English manufacturing plants are nationalized—controlled exclusively by the government. The raw material which is used is bought by the government at the lowest possible price; overhead charges are reduced and factory output increased by government efficiency experts, and the selling price of the finished article is determined by the same agency, after allowing a reasonable profit to the owner. * * *

What will be the result after the war? This question is vital to our future prosperity. England cannot, for obvious reasons, turn plants over to owners at once when peace is declared. She will be obliged to change gradually to the

conditions which previously existed, or there is a strong probability that she may see fit to continue to operate her industries as they are now being conducted. It will be at least five years before these factories are turned over to their former owners, if at all. Meanwhile, efficiency will be increasing, and with England's resources for getting her goods to the world's markets there is every indication that American goods will be forced out of the fields they have entered during the war. In addition to this problem, the ban which England has put on imported articles means a loss to American manufacturers who have enjoyed a large trade with England and her possessions.—Dr. W. E. Aughinbaugh in *Leslie's*.

Topical Talks on Iron.

XLVIII.—The Array of Steel in War.

The steel making capacity of the belligerents before the European war started is shown approximately by the table given below of production throughout the world prior to the war. The figures represent output of steel ingots, castings being included in the case of some countries. The figures do not represent commercial steel, as there is a loss of about one-fourth in converting ingots to finished commercial steel, but adequate statistics of commercial steel production are not available and the ingot basis is by far the most useful for comparison of the steel strength of the different countries. The maximum production in any year before 1914 is given. Some of the figures refer to metric tons of 2,204.6 pounds, others to gross tons of 2,240 pounds.

Steel Production.

United States (1913)	31,300,874
Germany (1913)	18,958,819
United Kingdom (1913) ..	7,663,876
France (1913)	4,939,000
Russia (1913)	4,837,000
Austria-Hungary (1912) ..	2,785,105
Belgium (1912)	2,515,040
Canada (1913)	1,042,503
Italy (1913)	933,500
Sweden (1913)	590,887
Japan (estimated)	300,000
India (estimated)	150,000
China (estimated)	125,000

Total 76,141,604

Taking these outputs as representatives of capacity, the proportions in August, 1914, when the European war started, were as follows, the Central Powers including Germany and Austria-Hungary and the Entente Allies including the British Empire (Great Britain, Canada and India), France, Russia and Belgium, other countries being neutral:

	Tons.	Per cent.
Central Powers	21,744,000	28.6
Entente Allies	21,147,000	27.8
Neutrals	33,251,000	43.6
Total	76,142,000	100.0

The changes that occurred during the first twelvemonth of the war were intricate. Italy and Japan joined the Entente Allies, adding 1.5% there and subtracting as much from the neutrals. Germany occupied all of Belgium engaged in steel making, 3.3%, and territory on which was located almost, if not quite three-fourths of the French steel industry, say 5.0%. The gains and losses made a net loss to the Allies of 6.8%, reducing them to 21.0%. Thereupon came the large orders for American steel. How much of the 8.3% loss to the Entente Allies was again for the Central Powers one does not know.

As to what the belligerent countries are now producing there is no more than fragmentary suggestions. Germany's steel output in 1916 may be estimated roughly at 16,000,000 tons, or a loss of 3,000,000 tons. Austria-Hungary's 1915 production was 2,686,226 tons, about the same as previously. Russia's pig iron production in 1916 was 23% less than in 1913, suggesting a decrease of 1,100,000 tons in steel production. Great Britain's steel production in 1915 was 684,000 tons greater than in 1913, and the present rate undoubtedly involves a further and important increase. Among the neutrals Sweden fell off a few thousand tons in 1915 and probably has not gained much since. The capacity of the United States increased rapidly whereby it entered the war with about 45,000,000 tons. There is no information as to the steel production Germany secures from occupied territory in France and Belgium. The German production reported is the production of the works formerly reporting for statistical purposes. For a guess one may take it that the Germans are getting steel from occupied territory in France and Belgium equal to one-half the capacity the works had when the territory was captured. There is no precise information at all as to French production, but there is reason to believe that there has been considerable new construction.

From the data available the produc-

tion—not capacity—just prior to the entrance of the United States into the war may be estimated as proportioned as follows, on the basis of the former capacity of 76,141,604 tons:

Central Powers .	28.5%	against	28.6%
Entente Allies .	23.0%	“	27.8%
Neutrals	60.0%	“	43.6%
Total	111.5%	“	100.0%

Production was at about 85,000,000 tons, or 11.5% over the capacity at the beginning of the war. The alignment of production in per cent. of the rate of 85,000,000 tons, with the United States on the side of the Entente Allies, now properly leading the table, becomes, with Sweden and China neutral:

Entente Allies	73.6%
Central Powers	25.6%
Neutrals . . . . .	.8%
	100.0%

To sum up, the steel capacities on the two sides were approximately balanced at the moment the war started, and aggregated somewhat more than one-half the world's capacity, while German occupation in France and Belgium changed the proportion to about two to three in favor of Germany, which was German purpose. Now there is less than 1% of the steel capacity neutral and the proportion is 20 to 7 against Germany, the result of the German autoocracy's crimes against the laws of humanity.

Steel Plants.

XVII.—The Vandergrift Works.

Vandergrift is one of the pioneer model mill towns, the creation of the late George G. McMurtry, until his death chairman of the board of the American Sheet & Tin Plate Company. Mr. McMurtry was president of the Apollo Iron & Steel Company, operating a sheet plant at Apollo, Pa., on the Kiskiminetas River, a tributary of the Allegheny, a plant dating from 1850, when he conceived the idea of a model plant and a model town. Possibly the idea of a model town was foremost in the original conception, but both plant and town were model. A virgin site was selected near Apollo and the town named Vandergrift after a large stockholder in the company. The first operation of the works was in October, 1895. The plant at the outset contained three 30-ton acid open-hearth furnaces, not a small steel plant in those days, for open-hearth, and 13 double sheet mills. The sheet bar mill was of the continuous type, which at that time had not become standard by any means, and much pioneer work had to be done. The records of the patent office show Mr. McMurtry as the inventor and patentee of a system for keeping the steel hot

as rolled, gas jets which were turned on as the steel passed through the rolls.

The present plant comprises four basic open-hearth steel furnaces and eight acid, all of 35 tons capacity. The employment of the acid process is very unusual in this connection, the basic process being commonly employed in making steel for sheets or tin plates, the use of the acid open-hearth process being confined chiefly to the manufacture of steel requiring a high and uniform tensile strength, as in special boiler steel, for instance. Of all the open-hearth steel produced in the United States in 1915, apart from that used for castings, only 4% was acid.

The capacity of the plant is 275,000 gross tons in ingots, 234,000 tons in sheet bars, 194,000 tons in black sheets and 224,000 tons in galvanized sheets. The galvanizing capacity, 21 pots, exceeds the sheet producing capacity, which comprises single and double mills equal in capacity to 36 ordinary sheet mills. The plant has sometimes galvanized sheets for nearby mills. It is distinctly a plant for the manufacture of galvanized sheets. In 1916 a pot for long ternes was installed.

The Iron and Steel Situation.

On the threshold of war the review of March as a month of iron and steel market history may well be brief, while thought hastens to contemplate the prospects of iron and steel conditions in war. March was the month leading up to war. In essence the declaration of war occurred April 2nd, in President Wilson's masterly address to Congress and to the world.

Pig iron prices advanced during March by an average of \$5.53, as shown by our composite. Finished steel prices advanced by an average of \$6.60 per net ton, according to our composite. There was a moderate volume of buying of pig iron, with no uniformity of action among consumers. While some consumers were covering for the first half of 1918 others stood committed to refrain from buying for the second half, or at least the fourth quarter, of the present year.

Steel bookings were heavy in March, easily exceeding the shipments. The business placed was almost wholly of routine character, producers simply covering customers for additional periods against expected requirements.

The price event of the month, indeed the greatest price event in the history of this whole unprecedented movement, occurred on the 8th, when the Carnegie Steel Company announced the following advances: Bars, 3.00c to 3.35c; shapes, 3.25c to 3.60c; plates, 3.75c to 4.50c, the advances being \$7 per ton on bars and shapes and \$15 a ton on plates. Other producers followed instantly.

Steel pipe advanced by two points early in the month and again by five points about the beginning of April. Wire products were advanced \$4 a ton March 5th.

Transportation conditions improved steadily during March, although slowly. By the close of the month the rate of pig iron production had reached the average rate maintained in 1916. Production had exceeded that rate by 6% in October and had fallen short of it by 11% in February of this year. The recovery in production has been rapid,

but is not as yet entirely complete. Although production increased the steel mills were able to ship portions of the steel accumulated during the railroad blockade.

The War.

In an address which must rank as one of the greatest state papers in the history of the world President Wilson electrified the country. Men were prepared for war before that memorable evening of April 2 when the President drew a scathing indictment of the German Government as the foe of human liberty and republican principles and united the American people, not simply to prosecute a war but for each one to do his part, more than his part if possible, and make the war his own. The spirit of 1776 is aroused throughout the length and breadth of the country, with "the price of those who know that the day has come when America is privileged to spend her blood and her might for the principles that gave her birth and happiness and the peace which she has treasured."

It is, then, a different people that is doing business to-day, and it will be a different steel market. Everything will be different. If America makes a mistake of underrating the task or being slack to endeavor to foresee all that may be foreseen.

Steel in War.

The beginning of the war found two-sevenths of the world's steel making capacity on one side, two-sevenths on the other side, and three-sevenths neutral. To-day, with the world's production of steel much larger than the aggregate capacity at the beginning of the war, sees the steel production aligned 20 to seven against the Central Powers, and only 1% of the world's capacity, Sweden and China, neutral.

It is not, then, a question of how much steel we have, but of utilizing the largest proportion possible of what we have. Production, of course, must be maintained, and care in the enlisting of men will undoubtedly be exercised. The transportation system broke down in

the winter, through the load being heavier than the physical equipment, handled as well as railroad management usually runs, could bear, but with unified control, through the Government supervision contemplated upon Mr. Daniel Willard, more can undoubtedly be accomplished, and full railroad service will doubtless be rendered in all directions necessary for the prosecution of the war, and one of those directions is in maintaining iron and steel production at maximum.

Allocation of the Steel.

Where skill, efficiency and organization will count is in diverting the flow of crude steel into the channels through which it will do the most good. The steel works are at the service of the Government. It is not in the tonnage of steel available, but in the capacity to fabricate it to useful ends, that the limits will be found. The regular naval program is nothing, in its steel requirements, less than 200,000 tons over a period certainly exceeding one year, when the steel industry of the United States is producing more than 2,500,000 tons of finished steel each month. The steel it may be found

possible to employ in building small submarines, in equipping yards for the proposed "mosquito fleet" of wooden vessels, and in furnishing parts for the vessels, will be relatively small, in point of tonnage.

Certain of the channels through which steel flows to be wrought into useful things will be strained. The demand for tin plate will be limited only by the acreage possible to plant in the canning crops, for canned goods could be used in double, perhaps triple, the normal season's pack, for provisioning the navy in its work, an army in training and the Allies across the water. Various items of hardware will doubtless be required in quantities that will disarrange the ordinary flow of business.

It will probably not be long until arrangements will have been completed to put in full operation again the shell factories that have been closing by reason of the completion of shell contracts for the Allies. Then a very considerable tonnage of steel can be used, running a little ways into the hundreds of thousands of tons per month.

Rating all contingencies at the maxi-

Pig Iron Prices.

(Averaged from daily quotations; at Philadelphia, Buffalo, Cleveland and Chicago, prices are delivered.

	Bessemer.	Basic, Valley	No. 2 fdy.	Basic, Phila.	No 2 X fdv. Phila.	Cleve- land.	No. 2 fdy. Chi- cago.	Ferro- mangan- ese.*	Fur- nace coke x
1916									
Jan. . .	21.00	18.00	18.50	19.24	19.71	18.25	18.80	19.00	14.92 115.40 3.14
Feb. . .	20.50	17.88	18.50	19.50	19.75	18.25	18.80	19.00	14.64 139.00 3.41
Mar. . .	20.67	18.48	18.50	19.60	19.77	18.77	18.86	19.24	15.00 175.00† 3.45
April . .	21.00	18.48	18.50	20.50	20.20	19.2*	19.00	19.50	15.00 175.00 2.45
May . .	21.00	18.21	18.44	20.50	20.25	19.15	19.08	19.50	15.00 175.00 2.34
June . .	21.00	18.25	18.39	19.90	20.04	18.75	19.30	19.50	14.63 175.00 2.54
July . .	21.00	18.00	18.25	19.15	19.75	18.75	18.80	19.50	14.00 175.00 2.65
Aug. . .	21.00	18.00	18.27	19.00	19.58	18.75	18.57	19.17	14.00 175.00 2.75
Sept. . .	21.32	18.27	18.58	19.50	19.50	19.04	18.67	18.75	14.38 165.00 2.94
Oct. . .	23.81	20.17	20.56	20.52	20.58	20.48	19.87	19.79	15.35 165.00 5.69
Nov. . .	29.40	24.80	25.60	24.68	25.00	27.31	24.58	25.70	19.72 165.00 6.91
Dec. . .	34.84	29.84	29.84	29.84	30.27	33.81	30.48	29.34	23.38 170.00 9.00
Year . .	23.05	19.87	20.16	10.96	21.20	20.67	20.40	20.67	15.84 164.12 3.94
1917.									
Jan. . .	35.00	30.00	30.00	30.00	31.48	35.25	30.95	30.50	24.27 175.00 9.44
Feb. . .	35.00	30.00	30.00	30.45	31.96	35.25	31.78	31.42	24.13 21.00 10.57
Mar. . .	36.70	31.93	34.96	33.93	37.01	35.81	36.21	35.65	29.67 270.00 9.58

* Contract price, f.o.b. Baltimore ÷ Et seq. domestic, delivered. x Prompt f.o.b. Connellsville ovens

mum, 20% seems altogether an outside estimate for the proportion of our steel-making capacity that could be put to useful war purposes of all sorts at any time this year.

Exports.

Exports of steel, in unfinished and finished form in 1916 amounted to 5,131,261 gross tons, with 979,529 tons of scrap, pig iron, bar iron and castings, making a total of iron and steel of 6,110,790 tons. Corresponding totals were 608,286 tons for January and 449,104 tons for February, the decrease in February representing in part the shortness of the month but in larger part the failure of vessels to sail on account of the submarine menace, before the United States had determined upon a course of action.

The writer does not look for large exports of pig iron, unfinished steel or steel in the ordinary finished forms. The European Allies are using all their men at home, many of their women, to equip and maintain their vessels and armies. Efficiency would suggest that we sent them, not raw materials for them to convert, but materials in the most finished form possible, guns, shells,

railway equipment, canned goods and the like, while we on our part accumulate arms, ammunition and water craft of all sorts. It is for us to work, and carry the work to the farthest possible stage.

Price Prospects.

To underestimate the consequences of our entering the war would be a grave and dangerous mistake. To overrate cannot be particularly harmful. It may be a case of overrating to suggest the possibility of Governmental fixing of prices in the iron and steel industry. The idea may seem absurd to those who have seen how eagerly large manufacturers have placed themselves and their plants at the disposal of the Government, willing to furnish their wares at far below the current market prices and have looked no farther. Everyone wants to do his share, but all are not equally positioned. There are large integrated steel producers, whose profits accrue at all stages, from the iron ore and the coking coal in the ground clear to the finished product ready for the Government. There are others not so integrated. The cost of steel to the integrated concern is vastly less than to

Finished Steel Prices.

(Averaged from daily quotations, f.o.b. Pittsburgh.)

	Shapes	Plates,	Bars,	Pipe,	Wire,	Wire Nails.	Grooved Steel Skelp.	Black.	Galv.	Blue Annld.	Tin plate.	Comp. Fin. steel.
1916												
January	1.87	1.90	1.87	76¾	1.98	2.13	1.75	2.60	4.75	2.55	3.75	2.1410
February ...	2.06	2.16	2.06	75½	2.11	2.26	1.94	2.60	4.80	2.65	3.83	2.2988
March	2.36	2.53	2.36	73¾	2.25	2.40	2.24	2.73	4.93	2.85	4.20	2.5579
April	2.50	2.75	2.50	71½	2.25	2.40	2.35	2.89	5.00	2.95	4.70	2.7166
May	2.50	2.83	2.50	70	2.45	2.50	2.35	2.90	5.00	3.00	5.46	2.8043
June	2.50	2.90	2.50	70	2.45	2.50	2.35	2.90	4.80	3.00	5.75	2.8300
July	2.50	2.90	2.50	70	2.45	2.50	2.35	2.90	4.40	2.90	6.00	2.8425
August	2.54	2.94	2.56	70	2.53	2.58	2.35	2.90	4.20	2.90	5.54	2.8588
September ..	2.60	3.00	2.60	69¼	2.55	2.60	2.35	2.91	4.20	2.90	5.75	2.9013
October ...	2.63	3.07	2.62	69	2.59	2.64	2.40	3.23	4.50	3.15	5.77	2.9747
November ..	2.86	3.33	2.76	68½	2.79	2.84	2.75	3.72	5.34	3.66	6.40	3.2036
December ..	3.03	3.53	2.93	66	2.95	3.00	2.85	4.40	6.27	3.65	7.18	3.4679
Year	2.50	2.82	2.48	70¾	2.45	2.53	2.34	3.06	4.85	2.99	5.34	2.8009
1917.												
January	3.11	3.61	3.00	64	2.95	3.00	2.85	4.50	6.50	4.25	7.23	3.5249
February ...	3.25	3.75	3.00	62½	2.95	3.00	2.85	4.63	6.75	4.50	7.83	3.6529
March	3.52	4.33	3.27	60¼	3.13	3.18	3.50	4.90	7.00	4.70	8.00	3.9454

the steel maker who pays \$35 or \$40 for his pig iron and observes that \$50 pig iron is predicted. For all producers all along the line to have equal participation complicated arrangements would have to be made. The ore producer or the coke producer may be anxious to serve the Government with his product at cost, but the Government does not use ore or coke and will not even re-

quire any quantity of pig iron. Government price-fixing, to the end that all may participate equally in the work, is not an impossible development.

Apart from this contingency, the trend of iron and steel prices is sharply upward all along the line. Let us hope for the best, that the war will be over before all the pig iron and steel already sold has been delivered.

U. S. Steel Corporation's Operations.

Earnings and Unfilled Orders.

Earnings by Quarters.

Net earnings by quarters since 1911:

Quarter.	1916.	1915.	1914.
1st	\$60,713,624	\$12,457,809	\$17,994,382
2nd	81,126,048	27,950,055	20,457,596
3rd	85,817,067	38,710,644	22,276,002
4th	105,968,347	51,277,504	10,935,635
Year	333,625,086	130,396,012	71,663,615
	1913.	1912.	1911.
1st	\$34,426,802	\$17,826,973	\$23,519,203
2nd	41,219,813	25,102,266	28,108,620
3rd	38,450,400	30,063,512	29,522,725
4th	23,084,330	35,181,922	23,155,018
Year ...	137,181,345	108,174,673	104,305,466

Unfilled Orders.

(At end of the Quarter.)

	First.	Second.	Third.	Fourth.
1904..	4,136,961	3,192,277	3,027,436	4,696,203
1905..	5,579,560	4,829,655	5,865,377	7,605,086
1906..	7,018,712	6,809,584	7,936,884	4,489,718
1907..	8,043,858	7,603,878	6,425,008	4,642,553
1908..	3,765,343	3,313,876	3,421,977	3,603,527
1909..	3,542,590	4,057,939	4,796,833	5,927,031
1910..	5,402,514	4,237,794	3,158,106	2,674,757
1911..	3,447,301	3,361,058	3,611,317	5,084,761
1912..	5,304,841	5,807,346	6,551,507	7,932,164
1913..	7,468,956	5,807,317	5,003,785	4,282,108
1914..	4,653,825	4,032,857	3,787,667	3,836,643
1915..	4,255,749	4,678,196	5,317,608	7,805,220
1916..	9,331,001	9,640,458	9,522,584	11,547,286

Bookings and Shipments.

In this table, first two columns, percentages of bookings and shipments to total capacity, our own estimates, while last column is derived from official reports of "unfilled tonnage" while third percentage column is directly computed from this tonnage column.

	Ship-ments.	Book-ings.	Dif-ference.	Dif-ference.
1915—	%	%	%	Tons.
February ..	57	66	+ 9	+ 96,800
March	67	60	— 7	— 89,622
April	71	63	— 8	— 93,505
May	76	85	+ 9	+102,354
June	79	113	+34	+413,598
July	83	104	+21	+250,344
August	91	89	— 2	— 20,085
September .	98	133	+35	+409,163
October ...	103	172	+69	+847,834
November .	102	186	+84	+1,024,037
December .	102	152	+50	+615,731
1916—				
January ...	102	112	+10	+116,547
February ..	102	157	+55	+646,199
March	104	164	+60	+762,035
April	104	146	+42	+498,550
May	104	82	—22	—297,340
June	104	82	—22	—297,340
July	90	86	— 4	— 46,866
September .	96	87	— 9	—137,773
October ...	106	145	+39	+492,676
November .	104	189	+85	+1,043,282
December .	96	136	+40	+488,744
1917—				
January ...	92	86	— 9	— 73,232
February ..	92	101	+ 9	+102,643
Total unfilled obligations, February 28, 1917, 11,576,697 tons.				

Railroad Earnings.

Railroad earnings per mile of road, having annual operating revenues above \$1,000,000, this being about 230,000 miles or about 90% of the total steam railway mileage; compiled by the Bureau of Railway Economics from reports furnished the Interstate Commerce Commission.

	1912-14			1914-15			1915-16		
	Revenue.	Expense.	Net.	Revenue.	Expense.	Net.	Revenue.	Expenses.	Net.
July	\$1,183	\$837	\$346	\$1,127	\$786	\$341	\$1,130	\$750	\$380
August ..	1,244	856	388	1,174	788	386	1,190	764	426
September	1,257	854	403	1,185	783	402	1,251	774	477
October ..	1,314	891	423	1,171	787	384	1,323	815	508
November	1,180	884	297	1,026	734	292	1,303	801	502
December.	1,116	821	296	993			1,253	802	451
January ..	1,021	795	226	939	718	221	1,133	797	336
February ..	914	746	168	900	680	220	1,140	800	340
March	1,091	801	290	1,015	722	293	1,260	844	416
April	1,038	782	256	1,013	724	289	1,223	827	396
May	1,047	800	247	1,044	735	309	1,307	857	450
June	1,097	789	308	1,094	732	362	1,302	851	451
Fiscal year	13,483	9,801	3,682	12,678	8,915	3,763	14,818	9,684	5,134

	1916-17		
	Revenue.	Expenses.	Net.
July	\$1,315	\$848	\$467
August ..	1,418	882	536
September	1,409	881	528
October ..	1,466	910	556
November	1,396	894	502
December	1,345	905	440

Wage Scale Averages.

Sworn averages of prices obtained by mills for shipments in months named, used in fixing wages under Amalgamated Association sliding scales. The figures represent the rates used, the actual ascertained averages lying between the figure given and the one five points higher. Base sizes of iron bars; average of 26, 27, and 28 gauges black sheets; tin plate per base box, 100-pound.

Bar Iron.

	1914.	1915.	1916.	1917.
Jan.-Feb.	1.1590	1.024	1.40	2.35
Mar.-April	1.176	1.087	1.60	
May-June	1.1257	1.10	1.85	
July-Aug.	1.0928	1.15	1.95	
Sept.-Oct.	1.0847	1.15	2.00	
Nov.-Dec.	1.037	1.30	2.15	
Year's av.	1.1125	1.144	1.83	

Sheets and Tin Plates.

	Sheets.		Tin Plates.	
	1916.	1917.	1916.	1917.
Jan.-Feb.	2.25	3.40	3.50	4.95
Mar.-April	2.50		3.70	
May-June	2.60		3.90	
July-Aug.	2.70		4.05	
Sept.-Oct.	2.75		4.10	
Nov.-Dec.	2.80		4.25	
Year's av.	2.60		3.92	

Pig Iron Production.

Rates per annum, including charcoal pig.

August, 1915	31,800,000
September	35,000,000
October	37,100,000
November	37,350,000
December	38,000,000
January, 1916	37,850,000
February	39,200,000
March	39,600,000
April	39,600,000
May	39,800,000
June	39,500,000
July	38,350,000
August	39,200,000
September	39,300,000
October	41,700,000
November	40,700,000
December	37,700,000
January	37,450,000
February	34,750,000
March	38,600,000
On April 1st	39,700,000

Actual production:

1910	27,303,567
1913	30,966,152
1914	23,332,244
1915	29,916,213
1916	39,434,797

Composite Steel.

Computation for April 2, 1917:

Pounds.	Group.	Price.	Extension.
2½	Bars	3.35	8.375
1½	Plates	4.50	6.750
1½	Shapes	3.60	5.400
1½	Pipe (¾-3)	4.40	6.600
1½	Wire nails	3.20	4.800
1	Sheets (28 bl.)	5.50	5.500
½	Tin plates	7.50	3.750
10 pounds			41.175

One pound 4.1175

Averaged from daily quotations:

	1913.	1914.	1915.	1916.	1917.
Jan.	1.7737	1.5394	1.4554	2.1410	3.553
Feb.	1.7625	1.5794	1.4716	2.2988	3.653
Mar.	1.7646	1.5638	1.5098	2.5579	3.945
April	1.7742	1.5337	1.5357	2.7165	
May	1.7786	1.5078	1.5381	2.8043	
June	1.7719	1.4750	1.5312	2.8300	
July	1.7600	1.4805	1.5692	2.8425	
Aug.	1.7400	1.5241	1.6059	2.8588	
Sept.	1.7093	1.5632	1.6506	2.9013	
Oct.	1.6779	1.5236	1.7264	2.9747	
Nov.	1.6203	1.4769	1.9089	3.2036	
Dec.	1.558	1.4324	2.0329	3.4679	
Year	1.7241	1.5182	1.6280	2.8009	

Scrap Iron and Steel Prices.

Melting Steel. Bundled Sheet. No. 1 R. R. No. 1 No. 1 Heavy
Pitts. Pitts. Pitts. Pitts. Phila. Ch'go.

1915—

Aug.	14.05	11.40	12.25	12.85	13.70	11.85
Sep.	26.50†	26.00†	29.75	1.49	1.36	1.30
Oct.	14.50	12.00	13.75	13.35	14.50	12.00
Nov.	16.12	12.55	15.35	13.90	14.65	13.95
Dec.	17.65	13.15	17.10	14.95	15.60	15.25
Year	13.25	10.54	12.26	12.40	12.54	10.90

1916—

Jan.	17.75	13.40	18.00	15.10	16.30	15.60
Feb.	17.20	13.60	18.75	15.35	16.25	15.75
Mar.	18.40	14.80	19.15	15.75	17.15	16.75
Apr.	18.00	14.75	19.25	16.00	18.00	16.75
May	17.00	13.65	19.65	16.10	17.00	15.90
June	16.25	13.00	19.00	15.40	15.45	14.80
July	16.70	12.50	18.80	15.30	15.00	14.30
Aug.	16.25	11.70	18.15	15.00	15.00	15.30
Sep.	16.61	11.65	18.35	15.00	15.00	16.00
Oct.	18.25	11.65	19.30	15.80	15.65	17.35
Nov.	22.50	13.75	21.25	17.75	18.25	21.00
Dec.	25.50	16.00	27.20	21.40	23.95	23.65
Year	18.37	13.38	19.73	16.16	16.92	16.90

1917—

Jan.	23.50	16.25	23.75	20.75	22.75	23.50
Feb.	22.50	15.75	22.50	19.75	21.15	22.25
Mar.	21.00	16.25	26.00	22.00	23.00	21.30

Composite Pig Iron.

Computation for April 2, 1917:

One ton Bessemer, valley	\$40.00
Two tons basic, valley (35.00)	70.00
One ton No. 2 foundry, valley	37.00
One ton No. 2 foundry, Philadelphia	40.00
One ton No. 2 foundry, Buffalo	36.25
One ton No. 2 foundry, Cleveland	38.30
One ton No. 2 foundry, Chicago	38.50
Two tons No. 2 Southern, foundry Cincinnati (34.90)	69.80
Total, ten tons	370.60

One ton 37.060

Averaged from daily quotations:

	1913.	1914.	1915.	1916.	1917.
Jan.	17.391	13.492	13.070	18.690	30.752
Feb.	17.140	13.721	13.079	18.564	30.946
Mar.	16.775	13.843	12.971	18.537	34.353
April	16.363	13.850	12.914	19.021	
May	15.682	13.808	13.206	18.965	
June	14.968	13.606	13.047	18.552	
July	14.578	13.520	13.125	18.585	
Aug.	14.565	13.516	14.082	18.514	
Sept.	14.692	13.503	14.895	18.697	
Oct.	14.737	13.267	15.213	20.192	
Nov.	14.282	13.047	16.398	25.243	
Dec.	13.838	13.073	17.987	30.082	
Year	15.418	13.520	14.150	20.306	

Unfinished Steel and Iron Bars.

(Averaged from daily quotations.)

	Billets.	Sheet Bars.	Rods.	—Iron bars, deliv.—		
	Pitts.	Pitts.	Pitts.	Phila.	Pitts.	Ch'go.
1915—						
Oct.	26.00†	26.00†	31.50	1.57	1.45	1.38
Nov.	26.20†	26.50†	36.00	1.72	1.54	1.51
Dec.	30.73†	30.73†	39.50	1.99	1.83	1.69
Year	13.26	10.54	12.26	12.40	12.54	10.90
1916—						
Jan.	32.50†	32.50†	42.00	2.24	2.02	1.79
Feb.	34.00†	34.00†	48.00	2.41	2.25	1.92
Mar.	41.00†	41.00†	56.00	2.56	2.40	2.17
Apr.	45.00	45.00	60.00	2.62	2.50	2.35
May	43.00	43.00	59.00	2.66	2.60	2.35
June	42.00†	42.00†	58.00	2.66	2.60	2.35
July	42.50†	42.50†	58.00	2.66	2.60	2.35
Aug.	46.00	46.00	58.00	2.66	2.60	2.35
Sep.	47.00	45.00	58.00	2.66	2.70	2.35
Oct.	48.00	48.00	59.00	2.66	2.75	2.35
Nov.	52.75	54.00	65.00	2.66	2.85	2.50
Dec.	56.96	56.96	70.00	3.02	3.19	2.89
Year	44.23	44.17	57.58	2.57	2.59	2.31
1917—						
Jan.	63.50	63.50	75.00	3.16	3.25	3.00
Feb.	65.00	65.00	77.00	3.16	3.25	3.00
Mar.	68.00	68.00	79.00	3.41	3.46	3.00

† Premium for open-hearth.

Price Changes of Iron and Steel Products From November 15, 1915 to Date.

Price changes in merchant bars, structural shapes, plates, wire nails, merchant pipe, sheets and tin plates are given below, with dates. These are the commodities used in compiling our composite finished steel. In some cases the dates named are those upon which prominent producers announced price changes, but more frequently the rates are merely those upon which our quotations were changed. A few other price changes are included.

1915—				1916—			
Nov 15	Blue ann. sheets	1.80	to 2.00	Mar. 1	Wire nails	2.30	to 2.40
" 16	Wire nails	1.85	to 1.90	" 8	Black sheets	2.60	to 2.75
" 18	Bars	1.60	to 1.70	" 8	Blue ann. sheets	2.65	to 2.90
" 18	Plates	1.60	to 1.70	" 13	Bars	2.25	to 2.35
" 18	Shapes	1.60	to 1.70	" 13	Plates	2.35	to 2.60
" 18	Galvanized sheets	4.00	to 4.25	" 13	Shapes	2.25	to 2.35
" 24	Galvanized sheets	4.25	to 4.50	" 15	Steel pipe	74%	to 73%
" 30	Sheets	2.40	to 2.50	" 15	Boiler tubes	63%	to 61%
" 30	Galvanized sheets	4.50	to 4.75	" 23	Bars	2.35	to 2.50
" 30	Blue ann. sheets	2.00	to 2.25	" 23	Shapes	2.35	to 2.50
Dec. 1	Wire nails	1.90	to 2.00	" 28	Plates	2.60	to 2.75
" 1	Boiler tubes	69%	to 68%	" 29	Sheets	2.75	to 2.85
" 15	Bars	1.70	to 1.80	" 29	Steel pipe	73%	to 72%
" 15	Plates	1.70	to 1.80	" 29	Boiler tubes	61%	to 60%
" 15	Shapes	1.70	to 1.80	April 5	Sheets	2.85	to 2.90
" 21	Wire nails	2.00	to 2.10	" 15	Boiler tubes	60%	to 56%
" 22	Sheets	2.50	to 2.60	" 19	Tin plate	4.50	to 5.00
1916—				" 24	Pipe	72%	to 70%
Jan. 3	Tin plate	3.60	to 3.75	May 1	Wire nails	2.40	to 2.50
" 3	Blue ann. sheets	2.25	to 2.35	" 3	Tin plates	5.00	to 5.50
" 4	Bars	1.80	to 1.85	" 16	Plates	2.75	to 2.90
" 4	Plates	1.80	to 1.85	June 7	Galv. sheets	5.00	to 4.75
" 4	Shapes	1.80	to 1.85	" 16	Tin plate	5.50	to 6.00
" 4	Pipe (with extra			July 7	Blue ann. sheets	3.00	to 2.90
	2 1/4%)	78%	to 77%	" 7	Galv. sheets	4.75	to 4.50
" 5	Blue ann. sheets	2.35	to 2.40	Aug. 1	Tin plate	6.00	to 5.50
" 7	Boiler tubes	68%	to 66%	" 7	Wire nails	2.50	to 2.60
" 12	Blue ann. sheets	2.40	to 2.50	" 15	Bars	2.50	to 2.60
" 14	Boiler tubes	66%	to 64%	" 18	Shapes	2.50	to 2.60
" 19	Blue ann. sheets	2.50	to 2.65	" 18	Plates	2.90	to 3.00
" 21	Bars	1.85	to 1.90	" 25	Galv. sheets	4.25	to 4.15
" 21	Plates	1.85	to 2.00	Sept. 7	Pipe	70%	to 69%
" 21	Shapes	1.85	to 1.90	" 7	Boiler tubes	56%	to 54%
" 21	Pipe	77%	to 76%	Sept. 20	Galv. sheets	4.15	to 4.25
" 24	Wire nails	2.10	to 2.20	" 28	Sheets	2.90	to 3.00
Feb. 7	Bars	1.90	to 2.00	Oct. 3	Blue ann. sheets	2.90	to 3.00
" 7	Plates	2.00	to 2.10	" 3	Galv. sheets	4.25	to 4.30
" 7	Shapes	1.90	to 2.00	" 6	Sheets	3.00	to 3.10
" 14	Wire nails	2.20	to 2.30	" 7	Tin plate	5.50	to 6.00
Feb. 15	Pipe	76%	to 75%	Oct. 13	Sheets	3.10	to 3.25
" 21	Bars	2.00	to 2.25	" 13	Galv. sheets	4.30	to 4.40
" 21	Plates	2.10	to 2.35	" 13	Tin plate	6.00	to 5.75
" 21	Shapes	2.00	to 2.25	" 16	Galv. sheets	4.40	to 4.50
" 21	Tin plate	3.75	to 4.00	" 19	Wire nails	2.60	to 2.70
" 29	Pipe	75%	to 74%	" 20	Sheets	3.25	to 3.35
" 29	Boiler tubes	64%	to 63%	" 20	Blue ann. sheets	3.00	to 3.15

Oct. 24	Plates	3.00	to 3.25
" 25	Bars	2.60	to 2.70
" 25	Shapes	2.60	to 2.70
" 25	Grooved skelp	2.35	to 2.50
" 26	Sheets	3.35	to 3.40
" 26	Galv. sheets	4.50	to 4.75
" 27	Blue ann. sheets	3.15	to 3.30
" 30	Tin plate	5.75	to 6.00
" 31	Shapes	2.70	to 2.80
Nov. 1	Boiler tubes	54%	to 52%
" 6	Wire nails	2.70	to 2.85
" 8	Sheets	3.40	to 3.65
" 15	Tin plate	6.00	to 6.25
" 15	Grooved skelp	2.50	to 2.60
" 15	Pipe	69%	to 68%
" 18	Galv. sheets	5.00	to 5.50
" 20	Tin plate	6.25	to 7.00
" 20	Sheets	3.65	to 4.00
" 21	Bars	2.70	to 2.90
" 21	Plates	3.25	to 3.50
" 21	Shapes	2.80	to 3.00
" 21	Blue ann. sheets	3.30	to 3.40
" 21	Boiler tubes	52%	to 46%
" 25	Grooved skelp	2.60	to 2.85
" 27	Blue ann. sheets	3.40	to 3.50
" 27	Galv. sheets	5.50	to 5.75
" 27	Wire nails	2.85	to 3.00
Dec. 4	Pipe	68%	to 66%
" 4	Sheets	4.00	to 4.25
" 5	Galv. sheets	5.75	to 6.00
" 8	Blue ann. sheets	3.50	to 3.65
" 11	Sheets	4.25	to 4.50
" 11	Galv. sheets	6.00	to 6.25
" 20	Tin plate	7.00	to 7.50
" 21	Bars	2.90	to 3.00
" 21	Shapes	3.00	to 3.10
" 21	Plates	3.50	to 3.60
" 26	Blue ann. sheets	3.75	to 4.00
" 30	Pipe	66%	to 64%
1917—			
Jan. 10	Galv. sheets	6.25	to 6.50
" 10	Blue ann. sheets	4.00	to 4.25
" 16	Tin plate	7.00	to 7.50
" 30	Shapes	3.10	to 3.25
" 30	Plates	3.60	to 3.75
Feb. 6	Tin plate	7.00	to 8.00
" 14	Pipe	64%	to 62%
" 15	Sheets	4.50	to 4.75
" 16	Blue ann. sheets	4.25	to 4.50
Mar. 5	Pipe	62%	to 60%
" 5	Wire nails	3.00	to 3.20
" 8	Bars	3.00	to 3.35
" 8	Plates	3.75	to 4.50
" 8	Shapes	3.25	to 3.60
" 14	Sheets	4.75	to 5.00
" 14	Galv. sheets	6.50	to 6.75
" 20	Blue ann. sheets	4.50	to 4.75
" 20	Galv. sheets	6.75	to 7.00

Steel Making Pig Iron Averages.

Bessemer and basic pig iron averages, compiled by Messrs. W. P. Snyder & Company from sales in the valley market of 1,000 tons and over.

	Bessemer.		Basic.	
	1916.	1917.	1916.	1917.
Jan. ..	\$20.645	\$35.00	\$17.833	\$30.00
Feb. ..	20.2136	35.418	17.984	30.00
Mar. ..	20.8625	36.423	18.25	32.537
April ..	20.70		18.00	
May ..	20.833		18.1607	
June ..	21.00		18.00	
July ..	21.00		18.00	
Aug. ..	21.00		18.00	
Sept. ..	21.9346		18.63	
Oct. ...	23.6576		20.3086	
Nov. ..	29.12		27.229	
Dec. ..	34.213		30.00	
Year ..	22.9316		20.0329	

Above prices are f. o. b. valley furnace; delivered Pittsburgh is 95 cents higher.

British Iron And Steel Exports.

	Pig Iron.	Rails.	Tin Plate.	Total.*
1912 ..	1,262,383	407,175	481,123	4,933,112
1913 ..	1,124,181	500,117	494,497	5,049,090
1914 ..	780,763	433,507	435,392	3,972,348
1915 ..	611,227	242,267	368,778	3,248,046
1915—				
Sept. ..	53,068	15,800	20,002	249,501
Oct. ..	78,973	13,640	31,968	312,141
Nov. ..	86,109	12,760	25,556	308,319
Dec. ..	74,892	9,937	30,641	259,782
Year ..	611,227	242,267	368,778	3,248,046
1916—				
Jan. ..	78,271	3,151	26,271	292,203
Feb. ..	84,351	3,905	27,289	283,250
Mar. ..	87,283	3,366	29,402	307,488
April ..	82,976	10,510	23,337	293,897
May ..	97,967	4,103	41,868	395,750
June ...	77,487	3,243	30,351	310,595
July ...	69,999	3,485	38,174	298,929
Aug. ..	95,655	1,983	34,124	319,928
Sept. ..	72,683	2,712	19,226	231,335
Oct. ..	72,187	6,929	10,929	241,261
Nov. ..	49,986	16,411	4,571	224,554
Dec. ..	48,542	2,317	14,248	158,609
Year ..	917,396	50,275	321,710	3,357,829
1917—				
Jan. ..	61,201	5,935	16,515	210,124

* Includes scrap, pig iron, rolled iron and steel, cast and wrought iron manufactures, bolts, nuts, etc., but not finished machinery, boilers, tools, etc.

Iron and Steel Imports and Exports.

Value of Tonnage and Non-Tonnage.

	1912.	1913.	1914.	1915.	1916.	1917.
January	\$18,451,914	\$25,141,409	\$16,706,836	\$18,053,421	\$51,643,807	\$108,423,640
February	21,801,570	24,089,871	16,520,260	16,470,751	54,155,386	85,117,010
March	24,474,799	27,221,210	20,551,137	20,985,505	58,300,297	
April	26,789,853	27,123,044	20,639,569	25,302,649	58,722,411	
May	28,050,247	26,718,970	19,734,045	26,536,612	72,918,913	
June	24,795,802	25,228,346	18,927,958	31,730,132	76,257,844	
July	24,917,952	24,170,704	16,737,552	35,892,106	70,745,162	
August	25,450,107	23,947,440	10,428,817	37,726,657	86,296,703	
September ...	23,286,040	22,831,082	12,531,102	38,522,175	90,895,592	
October	25,271,559	25,193,887	16,455,832	43,299,457	82,010,972	
November	26,406,425	20,142,141	15,689,401	48,056,220	77,570,840	
December	23,750,864	22,115,701	14,939,613	45,825,147	88,536,958	
Totals	\$289,128,420	\$293,934,160	\$199,861,684	\$388,400,832	\$867,323,044	\$193,540,650

Exports of Tonnage Lines,--Gross Tons.

	1910.	1911.	1912.	1913.	1914.	1915.	1916.	1917.
January	118,681	152,362	151,575	249,493	118,770	140,550	357,122	608,286
February	110,224	150,919	204,969	241,888	121,206	139,946	368,867	449,104
March	124,980	216,360	218,219	257,519	159,998	174,104	438,058	
April	117,921	228,149	267,313	259,689	161,952	223,587	384,924	
May	135,306	178,589	307,656	242,353	139,107	263,113	540,549	
June	120,601	174,247	273,188	243,108	144,539	356,431	526,772	
July	127,578	162,855	272,778	237,159	114,790	380,336	503,685	
August	131,391	177,902	282,645	209,856	86,599	405,952	597,750	
September	119,155	181,150	248,613	213,057	96,476	382,118	643,767	
October	129,828	186,457	251,411	220,550	147,293	349,848	610,125	
November	155,138	187,554	233,342	175,961	140,731	362,766	554,859	
December	150,102	190,854	235,959	181,715	117,827	353,856	580,961	
Totals	1,540,895	2,187,724	2,947,596	2,745,635	1,549,554	3,532,606	6,110,790	1,057,390

Iron Ore Imports.

	1914.	1915.	1916.	1917.
Jan. .	101,801	75,286	89,844	97,440
Feb. .	112,574	78,773	90,315	
Mar. .	68,549	88,902	93,383	
April .	111,812	91,561	75,712	
May .	125,659	98,974	148,599	
June .	188,647	148,575	134,154	
July .	141,838	119,468	156,755	
Aug. .	134,913	126,806	127,094	
Sept. .	109,176	173,253	109,747	
Oct. .	114,341	108,318	95,833	
Nov. .	90,222	113,544	82,257	
Dec. .	51,053	118,321	118,043	
Totals	1,350,588	1,341,281	1,325,736	97,440

Iron and Steel Imports.

	1913.	1914.	1915.	1916.	1917.
Jan. .	21,740	17,776	10,568	15,824	40,191
Feb. .	25,505	14,757	7,506	20,280	24,378
Mar. .	27,167	27,829	8,025	15,162	
April .	25,742	30,385	16,565	20,175	
May .	28,728	28,173	28,916	32,113	
June .	36,597	23,076	32,200	26,886	
July .	36,694	25,282	20,858	14,774	
Aug. .	18,740	28,768	27,557	32,257	
Sept. .	19,941	38,420	23,341	25,558	
Oct. .	20,840	22,754	34,319	30,170	
Nov. .	25,809	24,165	36,931	42,544	
Dec. .	26,454	9,493	35,409	44,133	
Total	317,260	289,778	282,443	275,743	64,569

Immigration Statistics.

Years mentioned refer to fiscal years ended June 30th. Aliens admitted include immigrant and non-immigrant, aliens departed include emigrant and non-emigrant.

Excess Arrivals Over Departures.

	Aliens.	Citizens.	Total.
1913	815,303	*61,098	754,205
1914	769,276	*82,211	687,065
1915	50,070	67,167	117,237
1916	125,941	11,197	137,138

July, 1915 ...	11,082	3,912	14,994
August	*14,324	*804	*15,128
September ..	*1,965	866	*1,099
October	4,877	662	5,539
November ..	3,292	*802	2,490
December ...	*570	*891	*1,461
January, 1916	7,303	*1,212	6,091
February	19,420	*1,826	17,594
March	23,791	4,198	27,989
April	26,143	4,471	30,614
May	24,708	2,021	26,729
June	22,184	65	22,249

July	18,244	3,634	21,878
August	21,413	304	21,717
September ..	29,310	1,443	30,753
October	28,339	*2,012	26,327
November ..	24,241	*183	24,058
December ...	18,791	*252	18,539
Six months .	140,338	2,934	143,272
January, 1917	19,563	*1,790	17,773
Seven months	159,901	1,144	161,045

January, 1917.

Immigrant aliens	24,745
Non-immigrants in	5,002
Total aliens in	29,747

Emigrant aliens out	4,285
Non-emigrant aliens out	5,899
Total aliens out	10,184

Citizens in	10,009
Citizens out	11,799
Excess citizens out	1,790

Change in population:

Aliens	+19,563
Citizens	-1,790
Net change	+17,773

* Excess of departures.

Our Foreign Trade.

Value of merchandise imports and exports, and favorable trade balance, calendar years.

	Imports.	Exports.	Balance.
1905	1,179,144,550	1,626,990,795	447,846,245
1906	1,320,501,572	1,798,243,434	477,741,862
1907	1,423,169,820	1,923,426,205	500,256,385
1908	1,116,374,087	1,752,835,447	636,461,360
1909	1,475,520,724	1,728,198,645	252,677,921
1910	1,562,904,151	1,866,258,904	303,354,753
1911	1,532,359,160	2,092,526,746	560,167,586
1912	1,818,133,355	2,399,217,993	581,084,638
1913	1,792,596,480	2,844,018,292	691,421,812
1914	1,789,276,001	2,113,624,050	324,348,049
1915	1,778,596,695	3,554,670,847	1,776,074,152
1916	*2,391,654,335	*5,481,423,589	*3,089,769,254

1914—

May	164,281,515	161,732,619	†2,548,896
June	157,529,450	157,072,044	†457,406
July	150,677,291	154,138,947	†5,538,344
Aug.	129,767,890	110,367,494	†19,400,396
Sept.	139,710,611	156,052,333	16,341,722
Oct.	137,978,778	195,283,852	57,305,074
Nov.	126,467,062	205,878,333	79,411,271
Dec.	114,656,545	245,632,558	130,976,013

1915—

Jan.	122,148,317	267,879,313	145,730,996
Feb.	125,123,391	298,727,757	173,604,366
Mar.	158,022,016	296,501,852	138,479,836
Apr.	160,576,106	294,745,913	134,169,807
May	142,284,851	273,769,093	131,484,242
June	157,695,140	268,547,416	110,852,276
July	143,099,620	267,978,990	124,879,370
Aug.	141,830,202	261,025,230	119,195,028
Sept.	151,236,026	300,676,822	149,440,796
Oct.	149,172,729	326,452,009	186,979,289
Nov.	155,496,675	327,670,353	172,173,678
Dec.	171,832,505	359,306,492	187,473,987

1916—

Jan.	184,350,942	330,036,410	145,685,468
Feb.	193,935,117	402,991,118	209,056,001
Mar.	213,589,785	409,850,425	196,260,640
Apr.	217,705,397	399,861,157	182,155,760
May	229,188,957	474,881,255	245,692,298
June	*245,795,438	464,784,318	218,988,880
July	182,722,938	445,472,000	262,749,062
Aug.	199,247,391	509,778,680	310,531,289
Sept.	164,038,614	515,007,408	350,968,794
Oct.	178,658,730	492,813,918	314,155,188
Nov.	176,988,305	516,976,359	339,988,054
Dec.	204,834,188	521,650,904	316,816,716

1917—

Jan.	241,707,182	*613,555,693	*371,848,511
Feb.	199,576,597	466,523,034	266,946,437

* High record. † Balance unfavorable.

Comparison of Security Prices.

	Range for 1915		Range for 1916		Range for 1917		Closing, Mar. 31,
	High.	Low.	High	Low.	High.	Low.	1917.
Iron and Industrial Stocks.							
Allis-Chalmers Mfg.	49 ¹ / ₈	7 ³ / ₄	38	19	30 ³ / ₈	20 ¹ / ₈	28
Allis-Chalmers Mfg. pfd.	85 ⁷ / ₈	33	92	70 ¹ / ₂	86 ⁷ / ₈	79 ¹ / ₂	86 ¹ / ₂
American Can	68 ¹ / ₂	25	68 ¹ / ₂	44	51 ⁷ / ₈	36	50 ³ / ₈
American Can pfd.	113 ¹ / ₂	89	115 ³ / ₈	107 ⁷ / ₈	110 ⁵ / ₈	106	107 ¹ / ₄
American Car & Fdy.	98	40	78 ¹ / ₂	52	71 ¹ / ₂	57	69 ¹ / ₂
American Locomotive	73 ³ / ₄	19	98 ¹ / ₄	58	82 ³ / ₄	62 ¹ / ₂	71 ¹ / ₈
American Smelt'g & Refining	108 ⁷ / ₈	56	123 ³ / ₄	88 ¹ / ₂	110 ¹ / ₄	93 ¹ / ₂	104 ¹ / ₈
American Steel Foundries	74 ¹ / ₂	24 ⁷ / ₈	73	44	65 ⁷ / ₈	52	61 ⁷ / ₈
American Zinc, Lead & Smelt'g	71	67 ¹ / ₄	97 ⁷ / ₈	29 ³ / ₈	41 ³ / ₈	31 ¹ / ₂	36 ¹ / ₈
Anaconda Copper	91 ⁵ / ₈	49 ¹ / ₂	105 ³ / ₈	77	86 ³ / ₄	70	83 ¹ / ₂
Baldwin Locomotive	154 ¹ / ₂	26 ⁵ / ₈	118 ⁵ / ₈	52	63 ¹ / ₂	43	59 ⁵ / ₈
Bethlehem Steel	600	46 ¹ / ₄	700	415	515	119	143 ¹ / ₂
Bethlehem Steel pfd.	184	91	168	126	135	117 ¹ / ₄	120 ¹ / ₂
Chino Copper	57 ³ / ₈	32 ³ / ₄	74	46 ¹ / ₈	63 ³ / ₄	48 ¹ / ₈	57 ¹ / ₂
Colo. Fuel & Iron Co.	66 ¹ / ₂	21 ³ / ₄	63 ¹ / ₄	38 ¹ / ₈	54 ¹ / ₂	38 ¹ / ₂	50 ¹ / ₂
Crucible Steel	109 ⁷ / ₈	18 ¹ / ₄	99 ¹ / ₂	50 ¹ / ₄	73 ¹ / ₄	50 ¹ / ₂	69
Crucible Steel pfd.	112 ¹ / ₂	84	124 ⁷ / ₈	108 ¹ / ₄	117 ³ / ₄	107	111
Driggs-Seabury .....	...	...	119 ³ / ₄	45 ¹ / ₈	84	39 ⁷ / ₈	79
General Electric	185 ¹ / ₂	138	187 ¹ / ₄	159	171 ³ / ₄	161	165
Granby Consolidated	91	79 ¹ / ₄	120	80	92 ³ / ₈	75 ¹ / ₈	87
Great Northern Ore Prop. ..	54	25 ¹ / ₄	50 ³ / ₄	32	38 ¹ / ₈	27 ³ / ₄	34
Gulf States Steel .....	...	...	193	71	137	99 ¹ / ₂	123 ³ / ₄
International Harv. of N. J.	114	90	126 ⁷ / ₈	108 ¹ / ₂	123	112 ¹ / ₄	116
Inter. Harv. of N. J., pfd.	120	100	122	114	121	116 ¹ / ₂	118
International Harv. Corp.	85	55	90 ¹ / ₄	68 ¹ / ₈	88	75 ¹ / ₂	78 ¹ / ₄
Inter. Harv. Corp. pfd.	114	90 ¹ / ₂	114 ³ / ₄	104 ⁷ / ₈	114	110 ¹ / ₄	111
Lackawanna Steel	94 ³ / ₄	28	107	64	89 ¹ / ₄	70 ¹ / ₈	85 ³ / ₄
National Enam. & Stamp. ..	36 ¹ / ₈	9 ¹ / ₂	36 ¹ / ₂	19 ³ / ₄	36	24	35
National Enam & Stamp. pfd.	97	79	100 ¹ / ₂	90 ¹ / ₈	101	95 ¹ / ₈	98 ¹ / ₂
National Lead	70 ³ / ₄	44	74 ³ / ₈	57	63 ¹ / ₄	52	59 ³ / ₈
National Lead pfd.	115	104 ³ / ₄	117 ¹ / ₈	111 ¹ / ₄	114	108 ¹ / ₄	112
New York Air Brake	164 ³ / ₄	56 ¹ / ₂	186	118	156	128	150
Pressed Steel Car	78 ¹ / ₄	25	88 ¹ / ₄	42 ¹ / ₂	83 ¹ / ₄	72 ¹ / ₈	78
Pressed Steel Car pfd.	106	86	108	98 ¹ / ₂	106	100 ³ / ₄	103
Railway Steel Spring	54	19	61 ³ / ₄	32	55 ³ / ₈	43	52 ¹ / ₂
Railway Steel Spring pfd.	102	86 ¹ / ₂	104 ³ / ₄	95 ¹ / ₄	101	98	98
Ray Consolidated Copper	27 ¹ / ₂	15 ¹ / ₄	37	20	31 ³ / ₈	23	30
Republic Iron & Steel	57 ¹ / ₄	19	93	42	86 ¹ / ₈	60	83
Republic Iron & Steel pfd.	112 ⁵ / ₈	72	117	101	105 ³ / ₄	99	103
Sloss-Sheffield	66 ⁷ / ₈	22	93 ¹ / ₄	37	74 ³ / ₄	50	72 ¹ / ₂
Sloss-Sheffield pfd.	102	85	103 ¹ / ₂	91 ¹ / ₈	99	94	97 ¹ / ₄
Texas Company	237	120	241 ¹ / ₂	177 ¹ / ₄	243	200	227 ³ / ₄
U. S. Cast Iron Pipe	31 ⁷ / ₈	8	28 ¹ / ₈	16 ³ / ₈	23 ¹ / ₂	17	21
U. S. Cast Iron Pipe pfd.	55 ¹ / ₂	32 ¹ / ₂	67 ¹ / ₂	48 ¹ / ₂	62 ³ / ₄	54	61 ¹ / ₂
U. S. Smelting & Refining ..	...	...	81 ¹ / ₂	57	67 ³ / ₄	52 ³ / ₄	62 ¹ / ₈
U. S. Smelting & Refining pfd.	...	...	53 ¹ / ₂	50	52 ¹ / ₄	50	51 ¹ / ₄
U. S. Steel Corporation	89 ¹ / ₂	38	129 ³ / ₄	79 ³ / ₄	118	99	114 ⁷ / ₈
U. S. Steel Corporation pfd.	117	102	123	115	121 ¹ / ₄	116 ³ / ₄	118
Utah Copper	81 ³ / ₄	48 ¹ / ₂	130	74 ³ / ₄	117 ¹ / ₂	97	110 ⁵ / ₈
Virginia Iron, Coal & Coke .	74	36	72 ³ / ₄	41	77	46	73 ¹ / ₂
Westinghouse Elec. & Mfg. ..	74 ⁷ / ₈	32	71 ⁵ / ₈	51 ¹ / ₄	55 ³ / ₈	46	52 ¹ / ₄

Comparison of Metal Prices.

	Range for 1915		Range for 1916		Range for 1917		Closing. Mar. 31, 1917.
	High.	Low.	High.	Low.	High.	Low.	
Pig Iron							
Bessemer, valley	21.00	13.60	35.00	20.00	40.00	35.00	40.00
Basic, valley	18.00	12.50	30.00	17.75	35.00	30.00	35.00
No. 2 foundry, valley	18.50	12.50	30.00	18.25	37.00	30.00	37.00
No. 2X fdy. Philadelphia.	19.50	14.00	30.75	19.50	40.75	30.75	40.75
No. 2 foundry, Cleveland .	18.80	13.00	30.95	18.50	38.30	30.95	38.30
No. 2X foundry, Buffalo.	18.00	11.75	35.00	18.00	36.00	35.00	36.00
No. 2 foundry, Chicago ..	18.50	13.00	30.00	18.00	38.00	30.00	38.00
No. 2 South'n Birmingham	14.50	9.25	25.00	14.00	32.00	24.00	32.00
Scrap Iron and Steel.							
Melting steel, Pittsburgh.	18.00	11.00	27.00	16.00	27.00	22.00	26.50
Heavy steel scrap, Phila. .	16.25	9.50	24.50	14.75	25.00	20.50	24.50
Heavy melt. steel, Chicago	15.25	8.75	24.00	14.50	25.50	21.50	25.25
No. 1 R. R. wrought, Pitts.	17.25	10.75	29.00	17.50	31.00	19.50	30.00
No. 1 cast, Pittsburgh	15.00	11.00	23.50	14.75	24.00	19.75	23.50
Iron and Steel Products.							
Bessemer rails, mill	28.00	28.00	38.00	28.00	38.00	38.00	38.00
Iron bars, Pittsburgh	1.90	1.20	3.25	1.90	3.50	3.25	3.50
Iron bars, Philadelphia ...	2.06	1.12½	3.16	2.06	3.41	3.16	3.41
Steel bars, Pittsburgh	1.80	1.10	3.00	1.85	3.35	3.00	3.35
Tank plates, Pittsburgh ..	1.60	1.10	3.60	1.85	4.50	3.50	4.50
Structural shapes, Pitts. .	1.80	1.10	3.10	1.85	3.60	3.10	3.60
Grooved steel skelp, Pitts..	1.75	1.12½	2.85	1.75	3.50	2.85	3.50
Black sheets, Pittsburgh ..	2.60	1.70	4.50	2.60	5.50	4.50	5.50
Galv. sheets, Pittsburgh ..	5.00	2.65	6.50	4.15	7.50	6.25	7.50
Tin plate, Pittsburgh	3.60	3.10	7.50	3.75	8.00	7.00	8.00
Wire nails, Pittsburgh	2.10	1.50	3.00	2.10	3.20	3.00	3.20
Steel pipe, Pittsburgh	79%	81%	64%	78%	60%	64%	60%
Connellsville Coke at ovens.							
Prompt furnace	3.50	1.50	12.00	2.50	13.00	8.00	8.00
Prompt foundry	3.75	2.00	12.00	3.25	15.00	10.00	10.50
Metals—New York.							
Straits tin	57.00	32.00	56.00	37.50	56.62½	42.50	54.50
Lake copper	23.00	13.00	35.00	23.00	36.00	28.00	34.75
Electrolytic copper	23.00	12.80	36.00	23.00	37.00	27.75	34.25
Casting copper	22.00	12.70	34.00	22.00	34.00	26.50	31.00
Sheet copper	27.25	18.75	42.00	28.00	44.00	42.00	44.00
Lead (Trust price)	7.00	3.70	7.50	5.50	9.00	7.50	9.00
Spelter	27.25	5.70	21.17½	8.37½	11.05	9.17½	10.67½
Chinese & Jap. antimony.	40.00	13.00	45.00	10.50	36.00	14.25	36.00
Aluminum, 98-99%	60.00	18.75	67.00	53.00	64.00	56.00	60.00
Silver	56½	46¼	77¼	55⅞	79	71¾	73⅞
St. Louis.							
Lead	7.50	3.50	8.25	5.45	10.00	7.30	9.31¼
Spelter	27.00	5.55	21.00	8.20	10.87½	9.00	10.50
Sheet zinc (f.o.b. smelter)	33.00	9.00	25.50	15.00	21.00	21.00	21.00
London							
Standard tin, prompts	£ 190	£ 148¼	£ 205	£ 161½	£ 218	£ 180¾	£ 214¾
Standard copper, prompts	86¾	57¼	153	84	146	130	136
Lead	30¼	18¼	36½	27¾	30½	30½	30½
Spelter	110	28¼	110	44	50½	45½	47
Silver	27¼d	22¾d	37d	26¼d	38¾d	35¼d	36¼d

Steel Production in 1916.

In our January number we published our estimates of pig iron, steel ingots and castings and rolled iron and steel in 1916. The pig iron estimate was 39,400,000 tons, and the official statistics which appeared a month ago give the total at 39,434,797 tons. The appearance of the United States Steel Corporation's report, giving its output of steel, permits an estimate to be made from a fresh viewpoint of the production of steel ingots and castings in 1916. It may be assumed that employment of capacity was about the same by the Steel Corporation and the independents in 1915 and 1916, and we have the fact that in 1915 the Steel Corporation's output was 50.9% of the total. Allowance should be made for new construction, there being data to show that in 1916 the Steel Corporation completed 665,000 tons of new capacity and the independents 3,540,000 tons. Assuming that the new capacity came in at equal intervals during the year, one-half the annual capacity should be taken as the contribution of the new capacity to the year's output. The Steel Corporation's output, as just reported, was 20,910,589 tons. Deducting one-half of 665,000 tons there is left 20,578,000 tons, produced by the old capacity, and if the independents produced, with their old capacity, in the same ratio as in 1915, 49.1%, their output was 19,850,000 tons. Adding to this one-half of 3,540,000 tons gives 21,620,000 tons as the total output of the independents, and adding to this the Corporation's output of 20,910,000 tons the grand total of steel ingots and castings appears to have been 42,530,000 tons, which by a remarkable coincidence is substantially the same as our old estimate. Both estimates may be out somewhat, but they are undoubtedly amply accurate for practical purposes. Last year the official statistics did not appear until early in July.

As our former estimate of rolled steel production in 1916, 30,500,000 tons, was based on an estimate of 41,500,000 tons of ingots (1,000,000 tons having been allowed for steel castings) there is no occasion to make an attempt to

check or revise that estimate. Rolled iron we estimated at 1,500,000 tons and that estimate stands also.

VALUE OF STEEL PRODUCTION

In 1914 steel production was the smallest since 1908 and prices were the lowest since 1898. A fair measure of the value may be taken by applying the average of our **composite finished steel** in 1914, 1.5182c, to the production of rolled steel, 17,202,420 gross tons, which gives about 585,000,000, representing roughly the value of the steel in the form in which it left the mills.

The 1916 production was about 30,500,000 tons, which if sold at the average price ruling July 1, 1915, to July 1, 1916, or 2.37 cents, for the composite, would represent about \$1,400,000,000. Production this year promises to be about 32,000,000 tons. Sold at the market of October, 1, 1916, 2.9125 cents, this would be 2,100,000,000; sold at to-day's market it would be \$2,900,000,000, practically five times the estimated value of the 1914 output.

Car and Locomotive Buying.

Freight Cars Ordered.

1915: Domestic	105,000	
Export	20,000	
Total, 1915		125,000
1916: Domestic	169,000	
Export	29,000	
Total, 1916		194,000
1917: Domestic	27,593	
Export	18,500	
January		16,840
February		19,566
March		9,687

Locomotives Ordered.

1915: Domestic	1,500	
Export	800	
Total, 1915		2,300
1916: Domestic	2,850	
Export	2,900	
Total, 1916		5,750
1917: Domestic	1,067	
Export	271	
January		807
February		299
March		232

Copper in March.

Copper Producers Agree to Furnish Government With Forty-five and One-half Million Pounds of Copper at 16.67c—Market Closes for the Month With Decline of About Two Cents Per Pound—Easier Tone, Slightly Increased Business at the Close.

The important and interesting features in copper for March were, first, the scarcity of spot metal, the large producers being well sold for the first half of the year; second, consumers' needs being covered by reserve stocks upon which to draw, the traffic delays and various strikes that occurred produced less serious effects than otherwise would have been the case. The most prominent development, was the price reduction offered to the United States Government by the largest producers who agreed to furnish 45,510,000 lbs. of copper in the next 12 months at 16.6739c per pound, or less than one-half the average price of copper for the month. This excited apprehension in some quarters that a heavy break in prices would immediately follow, but a better understanding of the patriotism that prompted the concession, modified this sentiment and the effect was to produce a gradual decline in prices that by the end of the month amounted to 2c per pound from the February closing prices, with an easier tone and slightly increased business. By many in the trade, however, it is looked upon as the beginning of a radical reduction in prices of copper, especially when it is pointed out by a member of the Munitions Committee in London, that despite the war consumption, copper to-day, is being produced in excess of requirements; the fact being overlooked, because of the difficulties encountered in transportation. Economies in the use of copper have also developed to such an extent as to be equal to the discovery of a new mining field, the recoveries from scrap being very largely increased. The London market throughout the month was unchanged at £151 for prompt American Electrolytic, and £147 for future shipments. Prices here, ranged from 36.25c to 36.50c for prompt-March Electrolytic

at the beginning of the month to 34c to 34.50c per pound at the close; prime Lake, from 35c to 36c from March 1st, to 34.50c to 35c at the close; Casting copper from 33c to 34c to 30.75c to 31.25c. Future deliveries of all kinds ranged proportionately, according to shipment, fractionally under these figures.

During the first week, prompt-March Electrolytic copper was quiet, scarce and difficult to obtain, being firmly held at 36.25c to 36.50c per pound; prime Lake was held at the same figures. With rumors of export inquiries in the market some interest was aroused in consumers who bought sparingly for a few days for deliveries against contracts, which brought out sharply, the fact of actual scarcity for any delivery before July and 1,000 tons of sheet copper were sold at 41c for deliveries running to July. Casting copper was sold at 33c for prompt-March shipment. At the beginning of the second week, a strike at the Laurel Hill plant of the Nichols Company closed operations there, which were not fully resumed until almost the end of the month after concessions had been made by both sides. A little later, prices were shaded slightly and on the 13th, export statistics, by order of the United States Government were discontinued, with the total to this date inclusive, 12,506 tons. At the close of the first fortnight, it was announced that the 1917 production of the American Smelting & Refining Co., because of their increased facilities, would amount to 1,200,000 pounds annually, and it was also at about this time that the strike at the Chrome Hill Smelter began. This strike, however, was quickly adjusted and the plant was in full operation a short time later. By the 16th, the market having been dull for sometime, prices eased slightly for

prompt Electrolytic to 35.75c to 36.25c; Lake copper, 35c to 35.50c; and Casting copper was 31.75c to 32.25c. On the 20th, it was asserted that shipments sold for February delivery on contracts, had not yet been received and some consumers were dependent upon reserve supplies, the fact being established that large producers were practically sold until July inclusive. Following this, came the offer to the Government at 16.6739c per pound of 45,510,000 pounds to be delivered at rate of 4,000,000 lbs. monthly, this amount being equal to about one-half day's total production, or 2% only, of the annual output. A few days later, a somewhat easier tone was evident and prompt March and prime Lake were sold at 35c to 35.50c each, while Casting copper was 31c to 31.75c but a greater number of second quarter offerings than at any time previously in the month were noted. On the 23rd; reports of a 3,000,000 pound inquiry were cheering and with labor difficulties now adjusted; with freer offerings of resale metal and willingness noted among the smaller producers to accept concessions for after July deliveries, business became brisker and on the 27th the navy schedule for brass and copper materials was issued; bids to be opened April 6th. The refineries were now able, also to make deliveries in two weeks, but early deliveries were not yet guaranteed. Prompt Electrolytic was offered at 35c; sales of April reported at 34.50c; May 34c and June 33.50c. On the 28th, second quarter business in fair volume was transacted at 33.75c, and all prices were shaded $\frac{1}{4}$ c per pound. It was also authoritatively announced that no large prospective orders or inquiries were at pres-

ent in the market, rumors to the contrary, notwithstanding. At the close, early deliveries were easier, second quarter was 33.50c; May-June together 33c. First half April sales were made at 34c to 34.25c cash, New York; April-May at 34c per pound; with prompt April Electrolytic nominally 34c; prime Lake 34c to 34.50c; Casting copper 30.75c to 31.25c. Total sales for the month were about 100,000,000 pounds, including the Government's purchases.

Copper Prices in March.

Day.	— New York —			London.		
	Lake.	Electro.	Casting.	Standard.		
	Cents.	Cents.	Cents.	£	s	d
1	35.50	36.25	33.50	139	0	0
2	35.50	36.25	33.25	139	0	0
5	35.50	36.25	33.25	139	0	0
6	35.50	36.25	33.25	139	0	0
7	35.50	36.50	33.25	139	0	0
8	35.50	36.50	33.25	137	10	0
9	35.50	36.50	33.00	136	0	0
12	35.50	36.25	32.75	136	0	0
13	15.50	36.25	32.25	136	0	0
14	35.50	36.25	32.25	136	0	0
15	35.50	36.25	32.00	136	0	0
16	35.25	36.00	32.00	136	0	0
19	35.25	35.75	31.50	136	0	0
20	35.25	35.75	31.50	136	0	0
21	35.25	35.75	31.50	136	0	0
22	35.25	35.25	31.50	136	0	0
23	35.25	35.25	31.25	136	0	0
26	35.25	35.00	31.50	136	0	0
27	35.25	34.75	31.37½	136	0	0
28	35.25	34.75	31.37½	136	0	0
29	34.75	34.25	31.37½	136	0	0
30	34.75	34.25	31.00	136	0	0
High ..	36.00	37.00	34.00	139	0	0
Low ..	34.50	34.00	30.75	136	0	0
Average	35.33	35.74	32.18	136	15	0

Lake Copper Prices.

Monthly average prices of **Lake Copper** in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.89	14.76	13.89	24.10	29.83
Feb.	15.37½	14.98	14.72½	27.44	34.04½
Mar.	14.96	14.72	15.11	27.42	35.33
Apr.	15.55	14.68	17.43	28.91½	
May	15.73	14.44	18.81	29.28½	
June	15.08	14.15	19.92	27.44	
July	14.77	13.73	19.42	25.81	
Aug.	15.79	12.68	17.47	26.58	
Sept.	16.72	12.43½	17.76	27.86	
Oct.	16.81	11.66	17.92½	28.37½	
Nov.	15.90	11.93	18.86	31.71	
Dec.	14.82	13.16	20.37½	33.07½	
Av.	15.70	13.61	17.64	28.17	

Electrolytic Copper Prices.

Monthly average prices of **Electrolytic Copper** in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.75½	14.45	13.71	24.10	30.26
Feb.	15.27	14.67	14.57	27.46	35.22
Mar.	14.92½	14.33½	14.96	27.44	35.74
Apr.	15.48	14.34	17.09	29.31	
May	15.63	14.13	18.60	29.81	
June	14.85	13.81	19.71	27.49½	
July	14.57	13.49	19.08	25.60	
Aug.	15.68	12.41½	17.22	27.36½	
Sept.	16.55	12.08½	17.70½	28.26	
Oct.	16.54	11.40	17.86	28.64	
Nov.	15.47	11.74	18.83	32.22½	
Dec.	14.47	12.93	20.35	33.84	
Av.	15.52	13.31½	17.47	28.46	

Casting Copper Prices.

Monthly average prices of **Casting Copper** in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.57	14.27½	13.52	23.06½	28.04½
Feb.	15.14	14.48	14.17	26.03	31.73½
Mar.	14.76	14.18	14.34	25.90	32.18
Apr.	15.33	14.18	16.48	27.16	
May	15.45½	14.00	17.41	27.37	
June	14.72	13.65	18.74½	25.10	
July	14.40½	13.34½	17.76½	23.61	
Aug.	15.50	12.27	16.46	24.67	
Sept.	16.37½	12.00	16.75	25.93	
Oct.	16.33	11.29	17.32	27.17	
Nov.	15.19	11.63	18.41	30.37½	
Dec.	14.22	12.83½	19.73	31.74	
Av.	15.33	13.18	16.76	26.51	

Sheet Copper Price Changes.

The changes in the base price of sheet copper since Feb. 15, 1916 are given below, with price of Lake copper on the same date.

1916—	Sheet Copper.	Lake Copper.
February 15	34.00	28.25
February 22	35.00	28.25
February 29	34.00	28.37½
March 10	33.00	27.25
March 16	33.50	27.62½
April 3	34.50	27.62½
April 13	35.50	29.25
April 26	36.50	29.75
May 9	37.50	30.00
August 1	35.50	25.50
August 19	36.00	27.00
September 27	37.00	28.25
November 14	40.00	31.75
November 20	41.00	32.75
December 5	42.00	34.00
1917—		
February 19	44.00	35.25

Waterbury Copper Averages.

	1913.	1914.	1915.	1916.	1917.
Jan.	17.00	14.75	14.12½	24.75	32.25
Feb.	15.50	15.12½	15.25	27.75	35.25
Mar.	15.12½	15.00	15.75	28.00	35.50
Apr.	15.75	14.87½	18.50	29.00	
May	15.87½	14.75	22.50	29.87½	
June	15.37½	14.37½	22.50	28.25	
July	14.75	14.12½	22.25	27.25	
Aug.	15.62½	13.00	19.50	27.00	
Sept.	16.87½	12.87½	18.50	28.00	
Oct.	16.87½	12.25	18.25	28.87½	
Nov.	16.25	12.25	19.37½	33.25	
Dec.	15.00	13.50	20.75	34.25	
Av.	15.83	13.91	18.94	28.85½	

Exports of Copper From the United States.

(In tons of 2,240 lbs.)

	1914.	1915.	1916.	1917.
January ..	36,018	26,193	23,663	26,958
February ..	34,634	15,583	20,648	30,392
March ...	46,504	30,148	26,321	
April	35,079	18,738	21,654	
May	32,077	28,889	16,062	
June	35,182	16,976	39,595	
July	34,145	17,708	35,066	
August ..	16,509	17,551	32,190	
September	19,402	14,877	29,803	
October ..	23,514	24,087	33,224	
November	24,999	23,168	22,598	
December.	22,166	42,426	26,486	
Totals ..	360,229	276,344	327,310	

Copper Producers Cut Prices in Half on Government's Requirements.

Announcement was made by the Council of National Defense on March 21st that the principal copper producers have agreed to furnish the government with 45,510,000 pounds of copper during the twelve months commencing April, 1917 at 16.67c per pound delivered Atlantic seaboard points. This is based on the requirements for the navy being 20,000,000 pounds and 25,510,000 pounds for the army, and the price of 16.6739c is said to represent the average selling price during the last ten years.

The nominal market price is 32.00c, so the concession by the producers amounts to about 15.50c per pound, or \$7,000,000, presuming that the market maintains its present level during the next twelve months.

The agreement between the Government and the copper companies was approved by Secretaries Baker and Daniels, after they had conferred with B. M. Baruch of New York City, a member of the Council of National Defense, who conducted the negotiations that resulted in the agreement. Mr. Baruch is Chairman of a sub-committee of the Council of National Defense which has charge of the metal supply for the army and navy.

The names of the copper companies entering into the agreement to furnish copper at the low figure were not disclosed then but were given out later.

The amount of copper which the producers agree to furnish will be enough it is believed, to supply the needs of the army and navy for a year. The understanding is that if this is not sufficient the price is to stand for all the copper the Government needs during the twelve months.

The statement issued by the council announcing the completion of the big copper deal follows:

The Council of National Defense, Washington, March 20, 1917.

"The Council of National Defense, in its efforts to mobilize the industries of the nation, has several

committees, one of which, under the Chairmanship of B. M. Baruch, is in charge of the question of metal supply. In the interest of the War and Navy Departments, Mr. Baruch has for more than a week been in conference with the large copper producing and smelting interests of the country. Today he received from them the attached letter:

"Mr. B. M. Baruch,

111 Broadway, New York City, N. Y.

Dear Sir:—Referring to our several conversations on the subject of supplying copper for the army and navy, to the letter of the Secretary of the Navy of March 16, and the telegram of the Secretary of War of March 18, both addressed to you, on behalf of the principal producers of copper in this country, we beg to say that we will furnish the quantity named for delivery within twelve months, viz., twenty million (20,000,000) pounds for the navy and twenty-five million, five hundred and ten thousand (25,510,000) pounds for the army, in approximately equal quantities each quarter from April, 1917, to April, 1918, at the price of 16.6739 cents per pound, delivered in regular shapes at Atlantic seaboard points.

"The price named is the actual average selling price obtained by the United Metals Selling Company, the largest seller of copper, over the period of ten years, 1907 to 1916, inclusive, and represents in our opinion the fair average price of all copper sold by American producers during that time.

"We offer the copper at this price notwithstanding our costs for labor, materials, supplies, etc., vary from 30 to 75% above the average during the ten-year period, because we believe it to be our duty to furnish the requirements of the Government in preparing the nation for war with no profit more than we received from our regular production in normal times. It is understood that the price quoted above is for the quantity and period of delivery above named.

"This willingness to furnish the copper supply needed by the Government at a maximum concession in price is a very gratifying evidence of the recognition of men

of large affairs of their patriotic obligation, and both War and Navy Departments appreciate their generous and public-spirited attitude."

The following is the list of the companies which signed the agreement to supply the Government with copper:

Anaconda Copper Mining Company; Utah Copper Company; Phelps, Dodge Company; Inspiration Consolidated Copper Company; Kennecott Copper Corporation; Chino Copper Company; Miami Copper Co.; Chili Copper Co.; Greene-Cananea Copper Company; Cer-

ro de Pasco Mining Company; Braden Copper Company; Ray-Consolidated Copper Company; North Butte Mining Company; Quincy Mining Company; Wolverine Copper Mining Company; Mohawk Mining Company; Utah-Consolidated Mining Company and Hancock Consolidated Mining Company.

In addition to these copper producers, the following producers have made a similar offer: Nevada Consolidated Copper Company; East Butte Mining Company; Calumet-Arizona Mining Company; Old Dominion Copper Mining Company; Magma Copper Co.

Tin in March.

An Active, Interesting Market Throughout The Month—Sharp and Puzzling Advances Abroad—Publication of Sailing Dates of Tin Boats Discontinued—Net Advance Here 3c Per Pound; £14 15s Abroad.

Throughout the month, the March tin market was interesting, with wide and evident fluctuations both at home and abroad. Sharp advances, due to actual scarcity of spot Straits tin, combined with apprehension as to future supplies, carried prices on March 26th, to 56.75c with 57c asked, a total rise to that date of 5.25c per pound; at the same time, spot Banca sold at 55.50c per pound. The foreign market, a few days previously, had registered a total advance of £16 to £216 and £215 respectively, for spot and future Standard; £216 2s 6d for spot Straits, and £216 c.i.f., London equivalent, at Singapore, while cables received on the 26th were £2 and £2 10s per ton higher at London, with £3 advance at Singapore. Large arrivals in the closing days of the month developed an easier spot market here, with irregularity in prices, and a reaction at London of over £2, but the Far East cables reported an advance to £218 c.i.f. London, with a slight recession of 10s on the 30th. Closing prices here, were 54.50c for spot, a net advance of 3c per pound.

Publication of Sailing Dates of Tin Boats Discontinued.

Early in the month, large consuming interests protested against existing British permit regulations, which they asserted favor speculation, through ex-

ploitation of spot tin, by dealers, instead of checking it. On the 7th, the English Censor announced that publication of sailing dates of tin-laden vessels would be discontinued. Large safety stocks were maintained by dealers as well as by consumers, this being considered a necessary precaution owing to the uncertainties concerning knowledge of sailing dates.

In the first few days of March, the foreign market declined £2 5s all around and spot Straits here, was nominally 51.50c with futures easier, about 1 $\frac{1}{4}$ c per pound lower, but by the end of the first week, spot had advanced to 54.50c and London registered £202 5s to £201 15s for spot and future Standard; £202. 15s for spot Straits, and Singapore £203 c.i.f. London equivalent.

Puzzling Advances in the Foreign Markets.

Business in futures was hampered by the uncertainty regarding sailing dates and with arrivals small, a recession of 1c per pound took place, and some quiet trading developed with a premium of 2c still asked for immediate delivery. Banca becoming scarce, sold at 52.50c for spot and 51c for March. Australian tin was held 1c under Straits for April-May shipments and 99% tin was sold at 50c on the

14th. Both the domestic and foreign markets were firm and immediately following, a London advance carried prices in three days, upward £5, which puzzled the trade, at home, no reason for it being perceived. More tin was received during the past year, than in any similar period previous to the war. About this time consumers made protest against British permit regulations which they declared favor dealers' interests, instead of consumers' needs, making it possible for dealers to exploit spot prices.

An unexplained sharp advance on the 19th carried foreign prices to £208 15s to £208 10s for spot and future Standard; £209 for spot Straits at London and at Singapore, and was followed by fair home inquiry from both dealers and consumers. With arrivals by this time of only 1,500 tons, anxiety and nervousness concerning the fate of shipments were evident and large sales of other brands than Straits were noted, at fractional declines. The importance of foreign cables began to lose significance in the trade here—the puzzling advance in the Far East was not understood and with supplies from other sources increasing, the American Smelting & Refining Company announced that through improved and increased facilities they expected to bring their current yearly production to 1,800 tons.

In the next few days, however, fluctuations in each succeeding 24 hours, carried prices here, on the 20th, to 55.50c for spot, with 56c asked; with London strong and up to £214 to £213 for spot and future Standard; £214 2s 6d for spot Straits. The next day, the foreign market receded £2, and at home, the large needs of canners—7,500,000, 000 cans against 4,000,000,000 cans last year—for tin containers to guard the food situation, came into prominent consideration, and prices eased 1/4c per pound, but on the 22nd, London was up to £213 to £212 for Standard; £213 2s 6d for Straits with the East Indies £211 c.i.f. London. Again, large sales of other brands of tin were noted, here, and the next day, 56c was publicly bid for spot Straits tin, with 57c asked and the settling price was 56.25c. Banca was scarce at 54.75c to 55c. Chinese tin in the course of a week had advanced

1 1/2c per pound to 45c for April shipment from China. Following this, in two days, with arrivals totalling only 1,600 tons, the settling price of spot Straits was 56.75c per pound, the pinnacle price of the month. Banca sold at 55.50c with 52.50c for steamers due in May.

Large Arrivals.

On the 27th, large arrivals were welcomed, the Philadelphian bringing 815 tons, and the Eurybates—the next day—coming by way of Panama, brought 1,000 tons. This relieved the immediate situation and gave assurance of good supply against March needs, notwithstanding the cargo of the Eurybates was nearly all sold to the United States Steel Corporation before arrival. Public sales were made at 56c only to be quickly followed by offers at 55.50c ex s.s. at dock, which however, met with light response—Australian tin being obtained at further concessions. During this time, the foreign market registered £216 to £215 for spot and future Standard; £216 2s 6d for Straits and £216

Tin Prices in March.

Day.	New York.	London.		
	Cents.	£	s	d
1	51.50	200	0	0
2	53.00	199	10	0
5	53.75	200	5	0
6	54.25	201	0	0
7	54.25	202	5	0
8	54.12 1/2	210	10	0
9	54.00	201	10	0
12	53.75	200	5	0
13	53.37 1/2	200	15	0
14	53.25	202	0	0
15	53.25	203	15	0
16	53.37 1/2	205	0	0
19	54.50	208	15	0
20	55.50	214	0	0
21	55.25	211	0	0
22	55.50	213	0	0
23	56.25	216	0	0
26	56.62 1/2	218	0	0
27	56.00	218	0	0
28	55.50	217	5	0
29	54.50	215	5	0
30	54.50	214	15	0
High	56.62 1/2	218	0	0
Low	51.50	199	10	0
Average	54.36	207	8	10

Visible Supplies.

Visible supply of tin at end of each month:

	1913.	1914.	1915.	1916.	1917.
Jan.	13,971	16,244	13,901	17,041	18,169
Feb.	12,304	17,308	14,548	16,511	19,627
Mar.	11,132	16,989	15,467	18,782	20,307
April	9,822	15,447	15,785	19,739	
May	13,710	17,862	14,646	19,614	
June	11,101	16,027	15,927	19,363	
July	12,063	14,167	16,084	18,404	
Aug.	11,261	14,452	15,127	18,042	
Sept.	12,943	14,613	15,191	16,192	
Oct.	11,857	10,894	13,154	17,415	
Nov.	14,470	11,483	16,451	21,186	
Dec.	13,893	13,396	16,216	20,737	
Av'ge	12,377	14,907	15,208	18,585	

Shipments From the Straits.

Monthly shipments of tin from the Straits Settlements to Europe and United States:

	1913.	1914.	1915.	1916.	1917.
Jan.	6,050	5,290	5,200	6,095	4,815
Feb.	4,660	6,520	5,584	6,250	6,255
Mar.	4,810	4,120	4,970	5,170	5,134
April	4,400	4,030	5,270	4,685	
May	6,160	6,900	6,759	3,965	
June	4,280	5,870	6,665	6,210	
July	4,770	4,975	5,606	5,410	
Aug.	6,030	3,315	4,712	4,526	
Sept.	5,160	4,973	5,296	3,270	
Oct.	5,020	4,610	4,441	5,868	
Nov.	5,560	5,155	6,713	5,380	
Dec.	5,110	6,435	5,301	4,758	
Total	62,550	63,093	66,517	61,587	
Av'ge.	5,213	5,258	5,543	5,132	

Consumption In the U. S.

Monthly deliveries of tin in the United States exclusive of Pacific Coast:

	1913.	1914.	1915.	1916.*	1917.*
Jan.	3,700	3,600	2,300	4,452	7,177
Feb.	3,500	3,300	3,375	6,388	3,930
Mar.	5,900	4,450	3,200	4,726	4,804
April	3,450	4,300	3,200	4,202	
May	3,350	3,800	5,600	5,455	
June	3,800	3,650	3,900	6,398	
July	3,900	3,900	5,300	4,432	
Aug.	3,600	2,900	4,500	4,335	
Sept.	3,100	3,600	4,300	4,025	
Oct.	3,700	3,700	4,900	4,556	
Nov.	2,800	2,600	2,975	3,165	
Dec.	3,100	1,900	5,200	4,082	
Total	43,900	41,700	48,750	56,216	
Av'ge.	3,658	3,475	4,062	4,685	

* Includes deliveries at Pacific coast.

Monthly Tin Statistics.

Compiled by New York Metal Exchange
(Tons of 2,240 lbs.)

	Mar.	Feb.	Mar.
	1917.	1917.	1916.
Straits shipments	2,200	4,264	2,175
To Gt. Britain..	874	943	495
" Continent ..	2,060	1,048	2,500
" U. S.			
Total from Straits	5,134	6,255	5,170
Total from Australia	15	95	245
Consumption.			
London deliveries	1,424	1,117	1,416
Holland deliveries	98	85	....
U. S.	4,804	3,930	4,726
Total	6,326	5,132	6,142

Stocks at close of month:

In London—			
Straits, Australian	2,980	2,927	1,644
Other kinds	694	995	886
In Holland .....	.....	.....	17
In U. S.	3,362	3,027	2,746
Total	7,036	6,949	5,293

Afloat close of month:

London	5,739	6,444	4,945
Banca & Billiton	3,855	2,018	3,340
U. S.	3,677	4,216	5,204
Total	13,271	12,678	13,489

	Mar. 31.	Feb. 28.	Mar. 31.
	1917.	1917.	1916
Total visible supply	20,307	19,627	18,782

Straits Tin Prices In New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	50.45	37.74	34.30	41.88	44.19
Feb.	48.73	39.93	37.32	42.63	51.37
Mar.	46.88	38.08	49.93½	50.42	54.36
Apr.	49.12	36.10	47.98	51.75	
May	49.14	33.30	38.78	49.15	
June	44.93	30.65	40.37	42.18	
July	40.39	31.75	37.50	38.46	
Aug.	41.72	50.59½	43.39	38.54	
Sept.	42.47	32.79	33.13	38.70½	
Oct.	40.50	30.39½	33.08	41.16	
Nov.	39.81	33.50	39.37½	44.17	
Dec.	37.64	33.60	38.75	42.66½	
Year	44.32	35.70	38.66	43.48	

c.i.f. London equivalent at Singapore. A recession here, followed the arrivals of the two vessels noted, which on the 30th, had carried prices back to 54.50c for spot Straits with Banca scarce at 54c to 54.50c, while London cables on

the 29th and 30th combined, recorded a recession of £2 10s on both Standard positions and on Straits tin, but cables from the Far East continued the advance £2 10s, with a slight recession on the 30th, of 10s.

Spelter in March.

Price Fluctuations the Narrowest in Two Years—Market Firm With Fair Volume of Business Done—Net Decline for Month $\frac{3}{8}$ c per Pound.

The most notable points of interest in spelter were, first the buying done early in the month by prominent trading interests, which awakened fresh interest in the trade, it being regarded as an effort to induce consumers to come into the market and to advance the price of second quarter spelter to a more profitable basis. Second, the importance of the price of zinc ores, it being pointed out that this factor was again beginning to control spelter prices, as had been the case before the war, when any weakening or strengthening in ore prices became quickly apparent in prices of the metal at St. Louis and New York. This influence was noticed in the narrow changes for the month—a $\frac{5}{8}$ c per pound recession. Prices of zinc ore during the first 19 days were \$80 to \$90, according to quality and grade, changing to \$75 to \$90 and remaining stationary to the close of the month.

At the beginning of March, there was an advance of $\frac{1}{8}$ c per pound on the various positions, from the closing February prices. Galvanizers, during the first week, placed orders for March-April shipments; dealers also bought, paying 10.75c New York and 10.37 $\frac{1}{2}$ c St. Louis. Brass special spelter was held $\frac{1}{2}$ c to 1c premium over prime western and future positions were offered at $\frac{3}{4}$ c premium without attracting buyers. A firm tone continued, notwithstanding increased production, this being counterbalanced by an advance in cost which was attributed to the shortage of labor at the smelters. An improved demand for intermediate grades of metal occurred during the second week, without any change in prices, at first; but, on the 12th a fractional ad-

vance was registered, which, however, was almost immediately lost. With the opening of the second fortnight, a fair volume of steady but quiet buying developed and prices remained firm on all positions with high grade spelter selling unusually well at 16c to 18c, according to brand and quality. During the next week, another fractional advance of $\frac{1}{8}$ c per pound was noted, and 10.80c was paid for prompt March New York, with April selling at 10.42 $\frac{1}{2}$ c.

Spelter Prices in March.

Day.	New York. Cents.	St. Louis. Cents.	London. £ s d
1	11.42 $\frac{1}{2}$	10.75	47 0 0
2	10.92 $\frac{1}{2}$	10.75	47 0 0
3	10.92 $\frac{1}{2}$	10.75	47 0 0
6	10.92 $\frac{1}{2}$	10.75	47 0 0
7	10.92 $\frac{1}{2}$	10.75	47 0 0
8	10.92 $\frac{1}{2}$	10.75	47 0 0
9	10.92 $\frac{1}{2}$	10.75	47 0 0
12	10.92 $\frac{1}{2}$	10.75	47 0 0
13	10.87 $\frac{1}{2}$	10.70	47 0 0
14	10.80	10.65	47 0 0
15	10.73 $\frac{3}{4}$	10.56 $\frac{1}{4}$	47 0 0
16	10.67 $\frac{1}{2}$	10.50	47 0 0
19	10.67 $\frac{1}{2}$	10.50	47 0 0
20	10.67 $\frac{1}{2}$	10.50	47 0 0
21	10.73 $\frac{3}{4}$	10.56 $\frac{1}{4}$	47 0 0
22	10.80	10.62 $\frac{1}{2}$	47 0 0
23	10.80	10.62 $\frac{1}{2}$	47 0 0
26	10.86 $\frac{1}{4}$	10.68 $\frac{3}{4}$	47 0 0
27	10.86 $\frac{1}{4}$	10.68 $\frac{3}{4}$	47 0 0
28	10.80	10.62 $\frac{1}{2}$	47 0 0
29	9.33 $\frac{3}{4}$	10.56 $\frac{1}{4}$	47 0 0
30	10.67 $\frac{1}{2}$	10.50	47 0 0
High	11.05	10.87 $\frac{1}{2}$	47 0 0
Low	10.55	10.37 $\frac{1}{2}$	47 0 0
Average	10.82	10.65	47 0 0

Spelter Prices in St. Louis.

Extreme price fluctuations of Prime Western Spelter, East St. Louis delivery, 15 months and years.

	—1914—			—1915—			1916			—1917—		
	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.
Jan.	5.25	5.10	5.14	7.62½	5.55	6.33	19.25	17.12	18.01	10.87½	9.00	9.82
Feb.	5.35	5.20	5.27	10.00	7.65	8.62	21.00	18.50	19.92	10.75	9.37½	10.32
Mar.	5.22½	5.12½	5.15	11.00	8.87½	9.80	20.62½	16.25	17.91½	10.87½	10.37½	10.67
April	5.12½	4.85	5.03	14.00	9.25	11.22	19.25	17.50	18.44			
May	5.00	4.90	4.96	21.00	13.00	15.59½	17.75	13.12½	15.75½			
June	4.97½	4.82½	4.93	27.00	17.50	22.14	13.87½	10.87½	12.62			
July	4.95	4.80	4.84	22.75	17.75	20.53	9.75	8.20	8.92			
Aug.	6.00	4.70	5.45	18.00	10.75	14.19	11.00	8.62½	9.52½			
Sept.	5.85	4.95	5.33	15.25	13.37½	14.10½	9.62½	8.50	9.06			
Oct.	5.00	4.60	4.81	14.62½	13.25	13.89	10.37½	9.25	9.83			
Nov.	5.20	4.80	4.97	19.00	14.37½	16.87½	13.12½	10.25	11.75			
Dec.	5.65	5.20	5.49	18.00	14.75	16.72	13.12½	9.62½	11.11			
Year	6.00	4.60	5.11½	27.00	5.55	14.16	21.00	8.20	13.57	*10.87½	*9.00	*10.26

* Three months.

Spelter Prices in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	7.23	5.33	6.52	18.18½	9.97
Feb.	6.49	5.46	8.86½	20.09	10.49
Mar.	6.29	5.35	10.12½	18.10	10.82½
April	5.79	5.22	11.51	18.61½	
May	5.51	5.16	15.82½	15.93	
June	5.23½	5.12	22.62½	12.80	
July	5.41	5.03	20.80	9.70	
Aug.	5.80	5.63	14.45	9.10	
Sept.	5.83	5.52	14.49	9.23½	
Oct.	5.47	4.99½	14.07	10.01	
Nov.	5.34	5.15	17.04	11.92½	
Dec.	5.22	5.67	16.91	11.28½	
Av.	5.80	5.30	14.44	13.75	

Waterbury Spelter Averages.

	1913.	1914.	1915.	1916.	1917.
Jan.	7.56	5.54	6.55	22.25	13.05
Feb.	6.81	5.70	11.85	22.70	13.80
Mar.	6.56	5.59	12.15	23.15	13.45
April	6.08	5.50	13.85	23.20	
May	5.77	5.38	20.55	21.20	
June	5.50	5.37	25.60	17.40	
July	5.61	5.26	24.90	15.20	
Aug.	5.99	5.66	19.30	13.60	
Sept.	6.13	5.91	17.85	13.70	
Oct.	5.74	5.23	16.85	12.95	
Nov.	5.60	5.38	19.36	14.10	
Dec.	5.44	5.90	21.15	13.20	
Av'ge	6.06½	5.53½	17.50	17.72	

Sheet Zinc Price Changes.

The following table gives the changes in the base price of sheet zinc since June 13, 1916, together with the price of spelter ruling on the same day.

	1916—	Sheet Zinc. St. Louis.	Spelter
June 13		20.00	13.37½
June 20		19.00	12.00
June 27		18.00	11.37½
July 6		17.00	9.37½
July 11		15.00	8.62½
October 26		16.00	10.12½
November 10		17.00	11.12½
November 17		18.00	12.00
November 20		19.00	12.12½
November 24		20.00	12.87½
November 24		21.00	12.87½

Exports of Domestic Spelter and Sheets--Short Tons.

	— 1916 —		— 1917 —	
	Tons.	Value.	Tons.	Value.
Jan.	10,483	\$3,601,970	15,351	\$4,455,110
Feb.	10,328	3,638,003		
Mar.	8,171	2,902,472		
April	9,133	3,461,914		
May	8,583	3,093,620		
June	11,309	4,036,656		
July	12,708	4,230,805		
Aug.	18,661	5,549,581		
Sept.	19,235	5,150,808		
Oct.	19,994	5,758,357		
Nov.	18,991	5,291,493		
Dec.	15,652	4,774,158		
Total	163,268	\$51,489,837		

St. Louis prompt-March was 10.62 $\frac{1}{2}$ c bid, with April offered at 10.37 $\frac{1}{2}$ c per pound. A stronger tone again became evident for a few days but with freer offerings in the market, the fractional advance was again lost and at the close price fluctuations for the month, recorded the narrowest changes that had

been made in two years past—a $\frac{3}{8}$ c per pound decline; prompt spelter being sold at 10.50c St. Louis; brass special, which was dull throughout the month, was offered at 10.87 $\frac{1}{2}$ c St. Louis with April at 10.75c per pound. Galvanizers were making inquiries in the last few days.

Review of Joplin Zinc and Lead Ore Markets For March.

Spring Months Promise Large Increase in Production.

The zinc ore markets for March, while holding fairly steady for the most part showed some decreases in the latter part of the month. The market opened strong at \$75 to \$90 and much of the ore marketed sold at the high levels or much above the minimum prices. First grades always brought \$90, and even the entire month up to the last week showed a universal holding of this class of ore to the maximum base in nearly every instance and in nearly all the camps. The last week of the month saw the market sag to a maximum of but \$85 but this was due in large part to lack of shipping facilities.

Calamine followed closely the same trend as blende the first two weeks of the month then began to dwindle to smaller figures. At the end of the month the market had reached a minimum of \$45 when it really should have brought no less than \$55 if it maintained its parity with blende ores.

Early in the month there was difficulty in obtaining cars for shipment of ores. This condition grew worse as the month wore on. The first week in the month saw but 8,520 tons of blende and 588 tons of calamine shipped and this could have been greatly increased. The last week of the month there was but 7,380 tons of blende and 352 tons of calamine and the bins of ore showed a decided increase in the surplus stock. What appears of greatest importance is the fact that little hope is held out for any betterment of conditions. Even if the railroads had the cars they are also short of motive power in the fields to be served.

The average prices of blende stayed over \$80 for the month, while calamine halted above \$42. The average shipment of blende approximated 8,560 tons per week, calamine 800 tons. The month opened with 7,525 tons of surplus stocks and closed with 12,360 tons of surplus stocks in the field.

The lead ore market remained at \$122.50 for the first two weeks of the month then dropped to \$115, at which level it held. Shipments were steady throughout the month, the average per week being slightly in excess of 1,200 tons. Surplus stocks were less than 200 tons at the beginning of the month and at its close it was estimated they had grown to 1,200 tons. Part of this growth was due to increased production and part to lack of shipping facilities.

Production has grown throughout the month, the prime reasons being improvement in the power supply from the electrical power company and the better weather conditions resulting from the opening of Spring. The long desired rains for water supply for milling purposes came at last and this helped many mills to increase their output. One counterbalancing difficulty having a direct influence is that the same lack of cars for shipping ore is found for shipping coal and plants dependent upon coal for power are having to run on a hand to mouth policy, often being unable to secure it early enough to keep from shutting down for short periods.

The spring months promise a large increase in production from the Oklahoma fields if the power situation can

be relieved. It seems very probable now that there will be sufficient electrical power to keep the plants going now equipped, but no surplus for others and it will depend upon the supply of coal whether or not this increase is maintained. In addition to the many new mills now planned, the amount of

prospect work under way is the largest in the history of the district and many new mines will be ready for development during the summer and following fall months. It would not at all be surprising if the district cannot supply fully 12,000 to 14,000 tons weekly before winter sets in again.

Lead in March.

Market Steady Throughout March With Narrow Range of Fluctuations—Features of Note Being Scarcity of Spot Metal and Advance of $\frac{1}{2}$ c per pound in Trust Price.

The notable features in lead during March, were first, the advance on the second, of the official price of the American Smelting & Refining Company to 9c per pound, base New York, and 8.92 $\frac{1}{2}$ c, St. Louis; this being the second change in less than one month, and a total advance of 2.60c for the year, or since March 3rd, 1916. Second, the continued scarcity of prompt lead, despite somewhat increased production and the receipt of new arrivals from Oklahoma fields, and a strong tone that prevailed to the close. Other features, were the partial adjustment of traffic complications which developed a perplexing situation requiring the most careful attention of the trade, and which, although greatly improved, had not been fully accomplished at the end of the month. The discontinuance of export statistics was commanded by the United States Government on the 13th, because of complications with the German Government. Price fluctuations for the month, were narrow and resulted in a gain of $\frac{1}{8}$ c per pound, at the close, when prompt lead was sold at 9.50 to 9.75c New York, and at 9.25c to 9.37 $\frac{1}{2}$ c St. Louis, with May position 9c at New York and 8.90c St. Louis.

Advance in Trust Price a Surprise.

During the first few days of the month, April shipments advanced $\frac{1}{4}$ c per pound and with only a light demand for lead, the advance in the Trust price was in the nature of a surprise to independent producers. On the 5th, a large tonnage of lead was sold on an average price basis by one of the largest producers. Lead ore was stationary in price at \$122.50 and the St. Louis

market was reported higher, strong and excited, with excellent demand from the West, and on the next day, several hundred tons for April shipment were reported sold at 9.25c with a bid of 9c for May position refused; the New York spot market at the same time was nominally 10c to 11c and Joplin ore advanced at \$132.50 per ton. Unusual supplies of 80% lead ore were reported received from the new Oklahoma district.

Spot and April Lead Scarce.

In the second week, the foreign market was £30 10s to £29 10s. In the domestic trade, April sales of 25 to 100 tons were reported, with this position becoming scarce as well as spot lead. A short time later, improved conditions at the smelters, due to better supplies of coal and gas fuel, as well as of electric power, gave promise of a larger output of Joplin ore and Oklahoma announced the completion of a large number of new concentrating plants. On the 12th, came cheering news of the arrival of some long delayed shipments from the West, and prices receded fractionally at New York, while St. Louis reported great strength in the market with light offerings, notwithstanding the arrival of 103,560 pigs against 98,560 during the previous week.

Market Easier on Increased Supplies.

About the close of the first fortnight, one consumer received a whole train-load of lead, with large consignments to other consumers of metal that had been started for the East last January. Naturally, with plenty of lead on hand, and small new business, prices receded

in the next few days, with offerings freely made, and some earload lots were sold at 9.62½¢ to 9.75¢ f.o.b. New York. During the next week, Joplin ore was reported down to \$115 but prices in the metal remained unchanged in quiet, and rather dull tradings.

At the beginning of the closing week, supply and demand were well balanced for spot metal, and a fair volume of business in May position was transacted at prices before noted. On the 28th, a large tonnage for April-May-June shipment was sold on an average price basis of 9¢ delivered East, while spot remained nominal at unchanged prices.

In the last two days, producers offered lead for shipment in 30 to 45 days, with earlier deliveries at a premium over prevailing prices, and it was reported that large stocks were still tied up in railroad cars awaiting movement to their destination. Another large tonnage for May-June shipments was sold, and premiums on earlier deliveries were maintained. On the closing day, prompt New York was sold at 9.50¢ to 9.75¢ and prompt St. Louis at 9.25¢ to 9.37½¢ while May position was 9¢ New York and 8.90¢ to 9¢ St. Louis; this being a fractional gain at the close, but also a fractional net decline for the entire month.

Lead Prices in March.

Day.	New York* Cents.	St. Louis. Cents.	London. £ s d
1	10.50	9.75	30 10 0
2	10.50	9.75	30 10 0
3	10.50	9.75	30 10 0
4	10.50	9.75	30 10 0
5	10.50	9.75	30 10 0
6	10.50	9.75	30 10 0
7	10.50	9.75	30 10 0
8	10.50	9.75	30 10 0
9	10.50	9.75	30 10 0
12	10.12½	9.62½	30 10 0
13	10.00	9.62½	30 10 0
14	9.87½	9.50	30 10 0
15	9.87½	9.50	30 10 0
16	9.87½	9.50	30 10 0
19	9.87½	9.50	30 10 0
20	9.75	9.37½	30 10 0
21	9.75	9.37½	30 10 0
22	9.75	9.37½	30 10 0
23	9.75	9.37½	30 10 0
26	9.75	9.37½	30 10 0
27	9.75	9.37½	30 10 0
28	9.62½	9.31¼	30 10 0
29	9.62½	9.31¼	30 10 0
30	9.62½	9.31¼	30 10 0
High ...	11.00	10.00	30 10 0
Low	9.50	9.25	30 10 0
Average .	10.02	9.53	30 10 0

* Outside market.

Antimony in March.

Extreme Scarcity of Spot Metal Sends Prices up 5¢ per Pound—Market Dull but Strong—Situation Relieved on Closing Day of Month by Arrival of 225 Tons.

Acute shortage of spot antimony was the prominent and important feature in March, this fact being responsible for the sharp advance of 5¢ per pound which was registered in the closing days of the month. Sales were claimed by one or two dealers to have been made as high at 37.50¢ and 38.50¢.

The month opened at 31¢ to 32¢, prices slightly below the February closing price. On the next day, English refined antimony was reported, held at £85. Business was light.

During the second week, American antimony was available and claimed to be of the same purity as Chinese and

Japanese metal being offered at 30¢ for prompt and 28¢ for delivery in two weeks. Dealers were buyers, at 16¢ in bond for February shipments from the Orient, but a little later antimony afloat was held firmly at 16.50¢ to 17¢ for February-March shipment, the strength of the future market attracting attention. Large trading among dealers and importers, for future positions ensued and the absence of consumers from the market was noted, arousing the suspicion that speculative tendencies were at work and about the same time Wall Street stories of sales made at 40¢ remained unconfirmed.

Good American buying was reported a few days after, with spot at 30c; March at 28c but future positions, because of delayed arrivals, were firm and high. Just before the close of the first fortnight, spot began to grow scarce and was held at 32c; March at 29c.

From this time on, the scarcity became more pronounced and prices advanced as shipments from the Pacific Coast, that were expected, failed to arrive, being tied up en route. Business was at a standstill apparently, when on the 19th, bids of 33c failed to bring forth any response. Small lots of March were offered at 29c duty paid and April duty paid, was held at 22c. On the following day 34c was bid and one dealer asked 37c—no business resulted. These conditions continued for several days business being entirely confined to future positions, with April difficult to obtain on the 26th, at 25c; May at 18.50c duty paid.

Shipments from the Orient in bond, were now held at 15.50c, 14.50c and 14c for March, April and May, respectively.

On the 27th, 200 tons were reported to have arrived on the s.s. Eurybates, all of which, with the exception of about 20 tons, had been previously sold for shipment to Canada. Prices for this metal advanced to 35c. April offerings by this time, had ceased and it was claimed on the 28th, that there was no spot antimony in New York. The May position was held at 19c to 19.50c duty paid. On the closing day, the s.s. Toyooka Maru was welcomed with 225 tons to relieve the situation which had become tense, with the price firm at 36c for spot metal. Guaranteed April delivery was now sold at 28c to 29c, duty paid, and March shipments from the Orient, in bond, were held at 15.50c to 15.75c; April at 14 to 14.25c per pound.

Aluminum in March.

Trade Disturbed by False Rumors of Large Russian Order—Careful Conservation of Metal in England—Market Firm But Quiet.

Aluminum at the beginning of March, was firmer in tone, at 58c to 60c for No. 1 Virgin; 53c to 55c for 98-99% pure remelted and at 38c to 40c for No. 12 alloy remelted. Abroad, the British Minister of Munitions called for monthly reports of all aluminum held in stocks or otherwise, either purchased or sold, with names of sellers and purchasers; aluminum delivered during the month, also scrap and swarf with specified purpose of all contracts or orders above 56 pounds; indicating the careful conservation of the metal now being exercised in that country.

On the ninth, false reports of a Russian order for 8,000 tons for delivery during 12 months disturbed the generally even tenor of the market, until it was established that Russian buying was all done through London. Another government, however, it was learned, was making inquiry for deliveries until the close of 1917. By the middle of the month, prompt Virgin was scarce with 60c paid from warehouse in New York. Carload lots of 100 to 150 tons were of-

fered at 59c to 60c, while offerings on the export inquiry for 1,000 to 2,000 tons were made at 60c to 62c per pound, without being accepted. Aluminum scrap clippings were 52c to 52.50c and 98-99% pure remelted advanced 1c to 54c to 56c per pound.

On the 19th, attention was called to the recent delivery of unremelted pigs on contracts calling for No. 1 Virgin ingots, and notice was given that such metal would not be accepted. It was expected that this practice would at once cease. Prices remained stationary during rather dull trading for several succeeding days, until on the 26th, an advance of 1c on all kinds was noted; No. 1 Virgin ingots 59c to 61c; 98-99% pure remelted, 55c to 56c; No. 12 alloy remelted, 39c to 40c, with spot aluminum becoming scarce in New York. On the 28th, 98-99% pure remelted advanced to 55c to 57c. On the last day, the expected export order had not yet been placed and there were unverified reports of sales of Virgin ingots as low as 55c by one dealer.

Lead Prices in St. Louis.

Extreme fluctuations of Soft Missouri Lead in St. Louis.

	1914			1915			1916			1917		
	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.
Jan.	4.10	3.95	3.99½	3.65	3.50	3.57	6.00	5.45	5.80	8.25	7.30	7.58
Feb.	4.10	3.85	3.95	3.80	3.62½	3.72	6.37½	6.00	6.17	10.00	8.00	9.04
Mar.	3.87½	3.65	3.83½	4.12½	3.82½	3.98	8.25	6.40	7.46	10.00	9.25	9.53
April	3.80	3.65	3.70	4.15	4.07½	4.11	8.12½	7.32½	7.67			
May	3.82½	3.77½	3.81	4.45	4.10	4.16	7.45	7.10	7.28			
June	3.82½	3.77½	3.80	7.50	4.80	5.76	7.20	6.62½	6.77			
July	3.77½	3.72½	3.75	5.67½	5.30	5.52	6.67½	6.00	6.20			
Aug.	3.75	3.70	3.73½	5.20	4.30	4.59	6.75	5.75	6.19			
Sept.	3.75	3.55	3.67	4.82½	4.35	4.53	6.95	6.50	6.71			
Oct.	3.55	3.35	3.39½	4.82½	4.40	4.51½	6.90	6.85	6.87½			
Nov.	3.82½	3.37½	3.58	5.22½	4.82½	5.08	7.25	6.85	6.96			
Dec.	3.70	3.60	3.67	5.42½	5.10	5.26½	8.00	7.20	7.53			
Year	4.10	3.35	3.74	7.50	3.50	4.57	8.25	5.45	6.80	*10.00	*7.30	*8.72

* Three months.

Aluminum, Silver, and Antimony Prices in March.

Day.	New York		
	Aluminum.	Silver.	Antimony.
	Cents.	Cents.	Cents.
1	59.00	76.50	31.50
2	59.00	76.25	31.00
3		76.62½	.....
5	59.00	76.62½	31.00
6	59.00	76.37½	30.50
7	59.00	75.50	30.25
8	59.00	75.37½	30.25
9	59.00	75.87½	30.50
10		75.50	.....
12	59.00	75.00	31.00
13	59.00	74.25	31.50
14	59.00	73.25	32.00
15	59.00	73.00	32.00
16	59.00	73.00	32.00
17		73.00	.....
19	59.00	72.87½	33.00
20	59.00	72.37½	34.00
21	59.00	72.25	34.00
22	59.00	72.25	34.00
23	59.00	72.12½	34.00
24		71.87½	.....
26	60.00	71.87½	35.00
27	60.00	71.75	35.00
28	60.00	72.62½	36.00
29	60.00	72.37½	36.00
30	60.00	72.37½	36.00
High	61.00	76.62½	36.00
Low	58.00	71.75	30.00
Average	59.23	75.86	32.75

Aluminum Prices In New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	26.31	18.86	19.01	54.33	60.00
Feb.	26.20	18.80½	19.20	57.50	58.05½
Mar.	26.72	18.30	18.94½	60.52	59.23
April	26.91	18.08	18.83	60.00	
May	25.95	17.93	21.85	60.00	
June	24.79	17.82	29.66	62.09	
July	23.34	17.59	32.50	60.15	
Aug.	22.73	20.38	34.00	59.48	
Sept.	22.00	19.28½	46.75	61.90	
Oct.	20.32	18.25	54.17½	64.55	
Nov.	19.49	18.83	57.85	64.80	
Dec.	18.85	19.02	56.80½	63.40	
Av.	23.63	18.59½	34.13	60.73	

Imports of Aluminum.

(In tons of 2,000 lbs.)

	1913.	1914.	1915.	1916.	1917.
Jan.	1,590	616	636	425	1
Feb.	996	635	291	324	
Mar.	1,007	741	383	223	
April	1,773	678	153	406	
May	1,169	586	209	696	
June	880	548	893	325	
July	1,216	709	356	208	
Aug.	668	736	245	106	
Sept.	529	636	521	12	
Oct.	560	1,283	93	247	
Nov.	528	406	61	348	
Dec.	677	516	426	4	
Total	11,593	8,090	4,267	3,324	

Extreme Fluctuations of Metals, Iron and Steel Prices for First Quarter 1917.

METALS.

F. O. B. NEW YORK.

FIRST QUARTER 1917

	Opening.	Highest.	Lowest.	Closing.	Average.	1916. Average.	1915. Average.	1914. Average.	1913. Average.
Lake Copper	29.75c	36.00c	28.00c	34.75c	33.07c	28.17c	17.64c	13.61c	15.70c
Electrolytic Copper	29.00	37.00	27.75	34.25	33.74	28.46	17.47	13.31½	15.52
Casting Copper	28.00	34.00	26.50	31.00	30.65	26.51	16.76	13.18	15.33
Tin	43.00	56.62½	42.50	54.50	49.97	43.48	38.66	35.70	44.32
Lead (open market)	7.56¼	11.00	7.50	9.62½	9.15	6.92	4.66	3.88	4.42
Spelter	9.92½	11.05	9.17½	10.67½	10.43	13.75	14.44	5.30	5.80
Aluminum (No. 1 Virgin 98-99%)	62.00	64.00	56.00	60.00	59.09½	60.73	34.13	18.59½	23.63
Antimony (Chinese and Japanese)	14.37½	36.00	14.25	36.00	26.40	25.33½	29.52	8.53½	7.43
Silver	75¾	79	71¾	73¾	75.69	65.66	49.69	54.81	59.79½

F. O. B. ST. LOUIS.

Lead (open market)	7.35	10.00	7.30	9.31½	8.71	6.80	4.57	3.74	4.26
Spelter	9.75	10.87½	9.00	10.50	10.26	13.57	14.16	5.11½	5.61

PIG IRON.

Bessemer Valley	\$35.00	\$40.00	\$35.00	\$40.00	\$35.57	\$23.05	\$44.90	\$13.99	\$16.26
Basic, Valley	30.00	35.00	30.00	35.00	30.64	19.87	13.78	12.80	14.77
No. 2 Fdy. Valley	30.75	37.00	30.00	37.00	31.65	20.16	13.81	13.02	14.87
No. 2 Fdy. Philadelphia	30.75	40.75	30.75	40.75	33.18	21.20	15.25	14.59	16.56
No. 2 Fdy. Cleveland	30.95	38.30	30.95	38.30	32.98	20.40	14.31	13.76	15.37
No. 2 Fdy. Buffalo	35.25	36.25	35.25	36.25	35.44	20.67	13.98	12.81	14.87
No. 2 Fdy. Chicago	30.50	38.50	30.50	38.50	32.52	20.67	14.46	14.15	16.39
No. 2 Fdy. Southern Cincinnati	27.90	34.90	27.90	34.90	28.92	18.74	13.49	13.15	14.63

IRON AND STEEL PRODUCTS.

F. O. B. PITTSBURGH.

Bars	3.00c	3.35c	3.00c	3.35c	3.09c	2.48c	1.31c	1.15c	1.38c
Plates	3.60	4.50	3.60	4.50	3.90	2.82	1.29	1.14	1.41
Shapes	3.10	3.60	3.10	3.60	3.29	2.50	1.30	1.16	1.42
Wire (nails)	3.00	3.20	3.00	3.20	3.01	2.45	1.66	1.57	1.70
Sheets (28 ga.)	4.50	5.00	4.50	5.00	4.68	3.06	1.93	1.89	2.20
Tin Plate	7.50	8.00	7.50	8.00	7.69	5.34	3.19	3.35	3.56

Trade Notes.

The Bronze-Alumina Corporation, Tonawanda, N. Y., has filed incorporation papers, with a capital stock of \$16,000, to manufacture aluminum, silicon, bronze and iron castings. F. A. Redner, J. E. Kaufmann and J. A. Willing, 141 Masten Street, Buffalo, are the directors.

The Maryland Tube Corporation, Munsey Building, Baltimore, contemplates the erection of a plant on a 26-acre tract at Relay, Md., to make brass and copper tubing and sheets. It will also do a general copper and brass business, including foundry work, and will handle metals of every description. Charles H. Birmingham is manager.

The Progressive Equipment Company, New York, has been incorporated with \$250,000 to manufacture mechanical and electrical devices by C. Nicoll, L. M. Anderson and D. A. Fraser, 61 Broadway.

The Snyder-Barr Screw Company, Detroit, has organized to manufacture screw machine products. It has taken over the Farrand Power Building at Twelfth Street and the Grand Trunk Railroad, where operations will begin April 1. The officers are H. W. Stuart, Sarnia, Ont., president; H. H. Gildersleeve, Sarnia, vice-president; M. L. Snyder, Detroit, secretary and treasurer; C. E. Barr, Detroit, superintendent of production.

Arth Brass and Aluminum Castings Company, Cleveland, O., has been incorporated with a capital stock of \$25,000 by Michael Arth, James Reihl, Alexander Arth, M. P. Thompson, J. M. Anacez.

The De Witt Mfg. Company, Russellville, has been incorporated to manufacture carburetors with \$25,000 capital by D. M. DeWitt, J. F. Hogins, and W. F. Bonds. Equipment required would include machine shop tools and foundry equipment.

The Gallaudet Aircraft Corporation of New York City is to build at once a plant on Chepiwanoxet Island, Warwick, R. I., where it will manufacture seaplanes and aircraft for the United States Government. The plant and equipment will cost approximately \$100,000 and will include a machine shop, 50x125', two stories, and an assembling shop, 75x150', one story.

The Laycock-Brosnan Mfg. Company, Indianapolis, has been incorporated with \$40,000 capital stock to manufacture bicycles, bedsprings, etc. The directors are Thomas B. and Read B. Laycock and Daniel B. Brosnan.

The Cleveland Brass & Copper Mills, Inc., Millbrook, N. Y., have been incorporated with a capital stock of \$1,050,000 to manufacture brass and copper products by H. S. Gould, B. F. Brustar, S. H. Moore, J. H. Foster.

The International Steel Treating Company, 718 Commercial Trust Building, Philadelphia, Pa., has increased its capital stock from \$1,000,000 to \$1,250,000 by an addition of \$250,000 of 7% cumulative preferred stock. It is the intention of the board of directors to issue only about \$100,000 of this stock, the proceeds of which will be devoted to the construction of a concrete and steel building now being erected at its plant at Darby, Pa., which with necessary furnaces and other equipment will cost about \$80,000. This building will be completed and in operation probably late in April and will be designed for the commercial heat treatment of steel up to 24' in length. Nathan Spering is chairman of the board of directors.

The Keystone Machine Company, recently incorporated with a capital stock of \$10,000 to manufacture special machinery, tools, dies, metal specialties and stampings, has taken over a plant at 206 Commercial Street, Rochester, N. Y. C. R. Seymour is president, W. H. Seymour vice-president and R. W. Arthur is secretary and treasurer.

STEEL AND METAL DIGEST

EDITORS

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H. F. LUTY

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"Our Country's Participation in the War."

"To such a task we can dedicate our lives and our fortunes; everything that we are and everything that we have, with the pride of those who know that the day has come when America is privileged to spend her blood and her might for the principles that gave her birth and happiness and the peace which she has treasured."

WOODROW WILSON.

To this end the United States Government has authorized

"THE LIBERTY LOAN OF 1917"

to which everyone is now given the privilege of subscribing.

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United States at War.

The first month of the United States at war has brought no great change in the industrial or market situation. There has been no stirring war news, probably because there was nothing to report, but the censorship promises to be tight and it is one of the questions of the day whether the country will be stirred from time to time by important war news, with its natural effect upon market sentiment.

Preparations for war have been very active but they represent simply the continuance on a broader scale and with more vigor the work that had already been undertaken, hence they have not been of a nature to cause great changes in the industries.

As Realization of the Situation Spreads.

The leaders in finance and industry, alike with prominent Government officials, realize that we have entered into a struggle in which all our resources and power will be employed. The mass of the people do not realize as yet, not having had the object lessons necessary to produce the broad conception of what this war is to be to us. Between the extremes there are various shades and since we cannot gauge how far vision has spread and to how many ranks vision is as yet denied we cannot gauge in the least the extent to which war will eventually affect industry by studying

the experience of the past month. We do not know the extent of the influences that will eventually be exerted by noting the response to them thus far, because we do not know the extent to which the influences have made themselves felt by the people. The people are responding quickly and grandly to the call for gardening and other service but this does not necessarily prove that there is complete realization of the seriousness of the great work the country is called upon to perform.

As realization of the full seriousness of the work spreads to the entire mass of the people the changes in industry will be more pronounced. The plans of the leaders are undoubtedly being worked out intelligently and thoroughly, but not so the spontaneous activities of the people. There is a desire to do something, the right thing if possible, but at any rate something. Road repair and road building was promptly stopped in many places, for "economy," when roads may be found a very important essential. Some people have taken backward steps, others have been running in circles. Those with a "genius for organizing" which may be exercised in most approved style when there is no definite or desirable purpose in the organization, have been busy.

It will be necessary for the country really to get down to its war work before the changes in industry caused by the war can be clearly discerned. The influences will come from above rather than from below. A given industry will be affected by the instructions it receives from Washington, and the orders for material that are allotted, rather than by the spontaneous act of the ultimate buyer. The chief response from the people has been a heavy demand for gardening tools.

The Government has been buying steel in relatively large quantities, but the metals only moderately. The first deal on copper, involving 45,500,000

pounds at 16.6739c has been followed by negotiations for additional quantities at a price not nearly so far from the market. Prices have been arranged for spelter. In steel products steel for the regular 1917 naval program, somewhat more than 400,000 tons, was arranged late in March, and in April most of the tonnage was definitely distributed, while orders were placed for almost as much more, for various purposes. The entire program involves about 1,100,000 tons of steel for the use of the Government, apart from shell and other steel to be bought later by the Government for its Allies. Messrs. J. P. Morgan & Company have turned over to the Government their work as purchasing agents.

Some steel has already been delivered to the Government, all other orders being simply set back a small amount. The steel mills have now been directed to present an analysis of their tonnage obligations to all classes of buyers, and it appears to be the intention to prescribe the order in which these obligations are to be met, some being perhaps hastened while some will certainly be designated as to be deferred. Some buyers of steel, therefore, will be called upon to make sacrifices and these may prove to be quite an item in the general alignment of industry.

The industries of the country were keyed up to such high tension when war was declared that there was no shock, no interruption to activity. On the other hand there will be found no room for the expansion in industry, due to the spending of money borrowed, or raised by exceptional taxes, that usually occurs with a country at war after the first shock has been passed. With us, it is in small degree a change in the volume of business or the sum total of activities, but there will be great changes in the character of these activities. These changes will become more and more important as the weeks pass.

Extreme Fluctuations of Metals, Iron and Steel Prices, First 4 Months, 1917.

METALS.

F. O. B. NEW YORK.

FIRST 4 MONTHS 1917

	Opening.	Highest.	Lowest.	Closing.	Average.	1916.	1915.	1914.	1913.
Lake Copper	29.75c	36.00c	28.00c	30.75c	32.92c	28.17c	17.64c	13.61c	15.70c
Electrolytic Copper	29.00	37.00	27.75	31.25	33.35	28.46	17.47	13.31½	15.52
Casting Copper	28.00	34.00	26.50	28.00	30.30	26.51	16.76	13.18	15.33
Tin	43.00	58.75	42.50	58.50	51.16	43.48	38.66	35.70	44.32
Lead (open market)	7.56¼	11.00	7.50	10.00	9.24	6.92	4.66	3.88	4.42
Spelter	9.92½	11.05	8.92½	9.61¼	10.25	13.75	14.44	5.30	5.80
Aluminum (No. 1 Virgin 98.99%)	62.00	64.00	56.00	60.00	59.32	60.73	34.13	18.59½	23.63
Antimony (Chinese and Japanese)	14.57½	36.00	14.25	32.25	28.17	25.33½	29.52	8.53½	7.43
Silver	75¾	79	71¾	74¾	75.24	65.66	49.69	54.81	59.79½

F. O. B. ST. LOUIS.

Lead (open market)	7.35	10.00	7.30	9.75	8.85	6.80	4.57	3.74	4.26
Spelter	9.75	10.87½	8.75	9.13¼	10.08½	13.57	14.16	5.11½	5.61

PIG IRON.

Bessemer Valley	\$35.00	\$43.00	\$35.00	\$42.00	\$37.01½	\$23.05	\$14.90	\$13.99	\$16.26
Basic, Valley	30.00	40.00	30.00	40.00	32.61	19.87	13.78	12.80	14.77
No. 2 Fdy. Valley	30.75	40.00	30.00	40.00	33.53	20.16	13.81	13.02	14.87
No. 2 Fdy. Philadelphia	30.75	42.75	30.75	42.75	33.44½	21.20	15.25	14.59	16.56
No. 2 Fdy. Cleveland	30.95	40.30	30.95	40.30	34.56	20.40	14.31	13.76	15.37
No. 2 Fdy. Buffalo	35.25	40.00	35.00	40.00	36.60	20.67	13.98	12.84	14.87
No. 2 Fdy. Chicago	30.50	41.00	30.00	41.00	34.23	20.67	14.46	14.15	16.39
No. 2 Fdy. Southern Cincinnati	27.90	37.90	26.90	37.90	32.91½	18.74	13.49	13.15	14.63

IRON AND STEEL PRODUCTS.

F. O. B. PITTSBURGH.

Bars	3.00c	3.35c	3.00c	3.35c	3.16½	2.48c	1.31c	1.15c	1.38c
Plates	3.60	4.50	3.50	4.50	4.05	2.82	1.29	1.14	1.41
Shapes	3.10	3.60	3.10	3.60	3.39½	2.50	1.30	1.16	1.42
Wire (nails)	3.00	3.50	3.00	3.50	3.11½	2.45	1.66	1.57	1.70
Sheets (28 ga.)	4.50	6.50	4.50	6.50	4.98	3.06	1.93	1.89	2.20
Tin Plate	7.50	8.00	7.00	8.00	7.66½	5.34	3.19	3.35	3.56

Business Trends.

Rate of Iron Production in April Second Largest on Record.

Returns of pig iron production in April, compiled by the Iron Age, show a total of 3,334,960 tons, or 111,165 tons a day, against 3,251,352 tons in March, or 104,863 tons a day. Only October, 1916, with 113,189 tons a day, showed a higher rate of output than April, improved coke supply having at last made an impression on furnace operation. The present rate of production is close to 40,500,000 tons a year, including charcoal iron. On May 1, 336 furnaces, with a daily capacity of 111,552 tons were in blast, against 331 furnaces with daily capacity of 107,766 tons April 1st.

The figures for the daily average production, beginning January, 1914, are as follows (in tons of 2,240 pounds):

	1914.	1915.	1916.	1917.
Jan.	60,808	51,659	102,746	101,643
Feb.	67,453	59,813	106,456	94,473
Mar.	75,738	66,575	107,667	104,882
April	75,665	70,550	107,592	111,165
May	67,506	75,015	108,422	.....
June	63,916	79,361	107,053	.....
July	63,150	82,691	104,017	.....
Aug.	64,363	89,666	103,346	.....
Sept.	62,553	95,085	106,745	.....
Oct.	57,361	100,822	113,189	.....
Nov.	50,611	101,244	110,394	.....
Dec.	48,896	103,353	102,537	.....

Heavy Financing of New Enterprises Continues.

It is apparent that promoters of new enterprises are unusually active. No better evidence of this is afforded than in the April returns of incorporations in the Eastern States for companies with a capital of \$1,000,000 or over, which amounted to \$361,510,000. This is the best monthly showing since February, 1916, when the charters filed involved \$365,995,300. In April a year ago the total was \$166,650,000.

Practically all lines of business are represented. A few concerns figured for no inconsiderable part of the total.

The grand total of all companies chartered with a capital of \$100,000 or over, covering all States, amounted to

\$439,493,400. In April a year ago papers filed for new enterprises indicated a total of \$223,908,900.

Following are the comparative figures as specially compiled by The Journal of Commerce and Commercial Bulletin of companies incorporated in the Eastern States during the last three years, with an authorized capital of \$1,000,000 or more.

	1917.	1916.	1915.
Jan.	\$244,450,000	\$270,995,000	\$51,150,000
Feb.	283,815,000	365,995,300	53,950,000
Mar.	281,000,000	194,750,000	70,050,000
April	361,510,000	168,650,000	32,200,000
Total	\$1,170,775,000	\$898,300,300	\$207,350,000

Heavy Foreign Trade.

The March returns of exports and imports, showing monthly exports second only to those of January and imports larger than in any other preceding month, prove that the German submarine campaign has not measured up to the anticipation of the Germans or the fears of the American and British shippers. Exports during March reached the enormous total of \$551,278,328, a gain of 18% over February, a decrease of only 10% from January, 1917, and a gain of 34% over March a year ago. Imports during March amounted to \$270,484,439, a gain of 35% over February and of 10% over June last year, the hitherto record total of imports, while 27% larger than in March a year ago.

Our foreign trade for March and nine months compares as follows:

	1917.	1916.
Exports -		
Exports	\$466,523,034	\$401,783,974
Imports	199,576,597	193,935,117
Excess of exports	\$266,946,437	\$207,848,857

Nine months ended March 31st:

	1917.	1916.
Exports	\$4,634,863,518	\$2,995,424,760
Imports	1,818,319,416	1,504,662,718
Ex. of exports.	\$2,816,544,102	\$1,490,762,042

Summary of trade since the war began:

	Exports.	Imports.
32 months—		
Merchandise.	\$11,581,978,706	\$5,530,669,545
Gold	300,178,702	1,404,462,521
Silver	148,627,116	79,755,090
Total	\$12,062,784,524	\$7,014,887,156

Business Trends.

Commodity Prices at Highest Levels.

Seemingly there is no limit to the unchecked rise of commodity prices which in general have registered some advance in each of the last eight months as we are informed by the leading economists that the present outlook suggests even higher prices than those prevailing. Considering the extreme limits to which the advance has been carried, it is not strange that signs of definite reaction have been looked for in some quarters. Nothing in previous experience has paralleled the action of prices since the memorable summer of 1914 and as the markets have gone higher month after month with comparatively little interruption many people have viewed the movement with increasing amazement.

That recoil from the present extraordinary levels must inevitably follow is obvious, yet those commodities which have yielded from time to time have invariably resumed their rise with vigor. How prices will ultimately be affected by this country's participation in the war is uncertain but in view of what has happened it seems a logical inference that the top prices of some of the leading materials has not yet been reached.

The latest index numbers represent an approximate increase of 3.8% over March 1, of 24% over April 1, 1916 and of 49% as compared with the same date in 1915. Contrast with April 1, 1914, reveals a rise of 66%.

	Bradstreet's.		Dun's.	
	1916.	1917.	1916.	1917.
Jan.	10,9163	13,7277	137,666	169,562
Feb.	11,1415	13,9427	142,260	176,273
Mar.	11,3760	14,1360	142,110	186,244
Apr.	11,7598	14,5769	145,690	190,012
May	11,7485		146,197	
June	11,6887		145,397	
July	11,5294		145,142	
Aug.	11,4414		143,930	
Sept.	11,7803		152,018	
Oct.	12,0399		152,355	
Nov.	12,7992		164,840	
Dec.	13,6628		168,090	

An Excellent Failure Report.

No reflection of embarkation of the country in the world war is found in the April failure returns to Bradstreet's Journal. Nor is there much, if any, sign that high prices restricted consumption, or that other causes led to any increase in the number of business casualties. Indeed, the number of failures for April is the smallest in any month for nearly four years past, or since July, 1913, to be precise, while the volume of liabilities is the lightest since November, 1916, and only three months of the past five years show a smaller total of failure damage. Compared with April of other recent years, the month just closed showed the smallest total of failures (1,097) since 1912, and the liabilities (\$11,223,362) were the lightest since 1907. Compared with March this year there were 4% fewer failures, and the decrease was 34%. Liabilities were 2.7% below those of March, 14% below those of April a year ago, and only one-third those of April, 1915.

The failures, assets and liabilities during the first four months of this year and those in the four months' periods of each year since 1908 compare as follows:

1917—	No.	Assets.	Liabilities.
Jan.	1,558	\$14,702,267	\$24,342,506
Feb.	1,126	5,390,711	12,186,528
Mar.	1,447	5,465,630	11,518,610
First quar.	3,831	25,558,608	48,047,644
April	1,097	5,397,272	11,223,362
Four months	4,928	30,955,880	59,271,006
<hr/>			
1916	6,311	32,496,402	66,474,469
1915	7,797	86,462,762	13,032,040
1914	5,416	53,400,686	99,221,622
1913	5,063	45,346,883	85,237,166
1912	5,089	34,721,149	67,180,009
1911	4,477	39,992,909	71,504,606
1910	4,176	34,483,221	69,804,280
1909	4,310	28,466,925	57,211,152
1908	5,349	79,890,208	134,192,265

Ability to Pay Steel Prices.

It is often remarked these days that consumers of steel products are showing a wonderful ability to pay high prices, and the observation is regarded as very comforting. The suggestion is that there is no danger of a break in the market and that profits are going to be so large that there will be ample ability to pay all the taxes Washington may decide to impose to help pay for the war as we go.

It is high time to look critically into this question. The steel market first ran out of bounds about the beginning of 1916. It was at that time that the high level of 1907 was passed. Just at that time, by the way, Judge Gary issued his "Stop, look and listen" statement. For some months thereafter the viewpoint of many in the trade was that the market had overreached itself, and that when the lower priced orders were filled there would not be enough consumption, at the record high prices, to maintain consumption equal to productive capacity.

Nothing happened, however, and it came to be rather generally thought that buyers had almost unlimited ability to pay, so there was no occasion to feel any concern.

Things have moved so rapidly, however, that it is necessary to look the matter over now and then. Using our **composite finished steel** as a guide, this being a weighted average of bars, plates, shapes, tubular goods, wire products, sheets and tin plates, and taking the average that obtained at the low point, in December, 1914, as 100%, we have the following comparison:

December 31, 1914	100%
January 1, 1916	146
October 1, 1916	205
May 1, 1917	315

To anyone who has a sense of proportion this exhibit is a startling one, in two ways. In the first place, a 46% advance was considered all that was safe, but now prices have more than tripled and the market is still going

strong, to all appearances.

There is another startling thing, however, startling the other way. We took October 1, 1916, for one of the comparison dates for two reasons, because it fell after a period of months in which steel prices had advanced but little and before a period in which they advanced very sharply, and because it is a date seven months ago, at a time when the large mills were sold ahead for nearly eight months. In general, therefore, the steel being delivered at present is at an average price more or less comparable with the market price on October 1, 1916. That was 205% of the low price, the present market being 315%. There has been an advance in the market since the sale of the material now being received by buyers greater than the entire cost of the steel at the low point.

The present bookings of steel business exceed the shipments. This does not necessarily prove that the buyers can afford to pay the prices. Quite possibly it proves that they think they can afford to do so, but with all due respect to buyers that is different.

When one asks who are these buyers a very striking fact develops. They are largely middle interests, not ultimate consumers. Ultimate consumers include those who build bridges, invest in office and hotel buildings, etc. Such structural lettings are notoriously light for a time of general activity. Ultimate consumers include railroads, who are not buying cars and locomotives at anything like their former rate. It is true they are buying rails, even for 1919, but rails are relatively cheap. They are not included in the composite used above. The difference is striking. In December, 1914, rails were 6% below our **composite finished steel**; now they are 60% below. Railroad buying of rails is no argument.

We are making no prediction; we simply present a certain group of facts for consideration.

Production of Rails in 1916.

The interesting point in connection with the statistics of rail production in 1916 is the fact that with the rail mill busily engaged throughout the year, and making sales during the year first for 1917 delivery and later for 1918 delivery, the production was less than ten among the preceding years and was 28% less than in the record year.

The production of rails in gross tons, has been as follows:

1899 ... 2,272,700	1908 ... 1,921,015
1900 ... 2,385,682	1909 ... 3,023,845
1901 ... 2,874,639	1910 ... 3,636,031
1902 ... 2,947,933	1911 ... 2,822,790
1903 ... 2,992,477	1912 ... 3,327,915
1904 ... 2,284,711	1913 ... 3,502,780
1905 ... 3,375,929	1914 ... 1,945,095
1906 ... 3,977,887	1915 ... 2,204,203
1907 ... 3,633,654	1916 ... 2,854,518

In 1899 the production record made 12 years earlier was broken, the 1887 output having stood as record until 1899. In those early times rails were used chiefly for new construction, rails in service not representing a very large aggregate and not wearing out rapidly because the density of traffic was nothing like what it is now. In 1887 there was record railroad building. The steel freight car began to come into general vogue about 1899, and with it came much heavier locomotives, whereby the rails in service began to wear out rapidly because they were too light in section for the much heavier rolling stock. There began an era of replacement, by heavier sections, culminating in the 1906 production of almost 4,000,000 tons. Ten successive years have failed to break that record. As things were going prior to the dislocation produced by the war it appeared probable that it would be quite a number of years more before a new record in output would be made.

It is impossible to predict when a new record will be made, but it is possible to designate the causes producing the new record if or when it is made. After the war there may be such a period of railroad building abroad as will result in heavy exports. The railroad building in Russia and France during the war has been sufficient to

make a new record for American rail exports, causing the new record of 540,349 tons to be made in 1916, but such a tonnage is not sufficient to cause any particularly large production. No very large tonnage production can be expected to result directly from the railroads being put in better position by an advance in freight rates. This would not cause the building of much new line. Indirectly, however, greater earnings for railroads and greater security for investments in railroads would result in the railroads securing capital for adopting much heavier freight cars, cars of 70 to 140 tons capacity being under trial now, as compared with the former maximum of 50 tons, and a larger employment of very heavy locomotives would come at the same time. This heavier rolling stock would result in the present rail sections, generally 85 to 100-pound on the big roads, proving too light for the rolling stock, and there would be a tendency to replace the rails with sections above 100-pound, resulting in very heavy demand for a few years, just as was the case in the era of replacement culminating in 1906.

As mentioned at the outset, the interesting point in connection with the 1916 rail tonnage, a tonnage that did not stand out prominently when it was above that of several years not much earlier and lower than that of ten other preceding years, was that it occurred when the rail mills were extremely busy. They were made busy by demand for other products. The mills that are known as rail mills rolled a great deal more tonnage of other products in 1916 than they did of rails, an important product being large rounds for shrapnel shells, while they also produced a large tonnage of billets and sheet bars. The total tonnage rolled by the "rail" mills probably exceeded 6,000,000 tons.

The Steel Corporation's proportion of the 1916 rail output was 53.73%, against 51.75% in 1915 and 50.64% in 1914. As usual, the less profitable business trended towards the Steel Corporation.

Ferromanganese Supplies.

The question of ferromanganese supply during the war has been giving considerable concern. The high prices reached for spot lots are disquieting, but are not proof of a general scarcity, because large consumers carry stocks and contract ahead while many small consumers depend upon purchases in the prompt market, and famine prices could rule in the spot market at the same time that large consumers were well provided.

The question is entirely one of ore supplies, ore being moved by water to both the United Kingdom and the United States.

A study of statistics over a period of many years indicates that on January 1, 1915, there were very large stocks of ferromanganese or manganese ore in the United States, stocks very much beyond the normal. For long range statistics see page 45 of our annual Metal Statistics. Supplies of ferromanganese in 1915 and 1916 have been as follows:

	1915.	1916.
Production	149,521	221,532
Imports	55,263	90,928
Total	204,784	312,460

Normally the consumption of ferromanganese is in the manufacture of substantially all steel with the exception of Bessemer steel rails, and in the three years preceding the war the consumption was three-fourths of one per cent., against the tonnage of all steel ingots and castings produced, except that involved in Bessemer steel rails. Since ferromanganese started its war advance, in August, 1914, there have been efforts to curtail consumption, by using substitutes, and otherwise. These do not seem to have been very successful, and the statement has been made on good authority that Germany has found it impossible to make good steel with substitutes.

At the normal rate, the ferromanganese consumption would have been 238,000 tons in 1915, 33,000 tons above the supply indicated above, and about 322,000 tons in 1916, or 10,000 tons above the supply, a total theoretical de-

ficit of 43,000 tons. If, however, the consumption per ton of steel had been merely 7.7% less than the former average this apparent deficit would be exactly wiped out, and there would be the same considerable stocks of ferromanganese in the country on January 1, 1917, as existed on January 1, 1915.

Imports of manganese ore into the United States were chiefly from British India until about 1909, when Brazil began coming to the front, and later there were large imports from Russia in Asia. When the war started Brazil was called upon for much larger tonnages. The Brazilian production of manganese ore accordingly took a sudden jump, as is shown by the following statistics of production in metric tons:

1912	154,870
1913	122,300
1914	183,330
1915	288,671
1916	503,130

We do not know the yield of the Brazilian ores. For a number of years the yield, of such ores as the United States imported, was about 40%.

Manganese ore imports of the two ferromanganese producing countries in which we are interested have been as follows:

	United States.	United Kingdom.
1915	313,985	372,724
1916	576,321	439,509
January, 1917 .	49,530	32,047
February, 1917.		29,767

The British consumption of ferromanganese is probably 80,000 or 90,000 tons a year. The British production is not known. On a yield of 40% the British ore imports in 1915 and 1916 would furnish 325,000 tons, while exports to the United States of 146,000 tons and domestic consumption of 170,000 tons would make 316,000 tons, so it would appear that the United Kingdom broke even up to the beginning of this year, perhaps with a little to spare. Using the same 40% factor, which is only an approximation, the ore imports into the United States would provide for the production of 356,000 tons.

while the actual output was 371,000 tons, indicating perhaps a slight reduction in ore stocks.

On the whole, it seems to be an intelligent guess that both the United States and the United Kingdom have at the present moment fairly large stocks of ferromanganese or manganese ore, or both, equal to several months' requirements. As to the future, the United Kingdom needs about 7,000 tons a month of ferromanganese and the United States about 27,000 tons, or 34,000 tons for the two countries.

This may require in the neighborhood of 85,000 tons of manganese ore per month for the two countries, distributed in accordance with how much ferromanganese we import from England. The combined imports of the two countries last January totaled 81,577 tons. It is hoped that the foregoing analysis, crude as it is in some respects, will furnish a working basis upon which the monthly statistics of manganese ore imports into the United States and the United Kingdom can be studied in future months while the ferromanganese situation remains an important one.

American Efficiency.

The fact cannot be emphasized too strongly that there is a contest between American efficiency and the German brand, which the Germans have been pleased to denominate "kultur". We desire to be efficient in all matters, but let us above all endeavor to be efficient in serving towards the best prosecution of the war.

The other day a man remarked that he endeavored, when meeting other business men, to avoid "war talk". Let us differentiate. The war is a big subject and there are various divisions. Discussions of the latest developments at the front, what a given success or a given repulse may mean, is about as much to the point as discussion of battling averages by clerks who ought to have their minds on their work. Discussion of the precise duration and outcome of the war is equally far from the point, for such discussion could be repeated, from new viewpoints, say once a week.

Discussion of the war from the viewpoint of what one can do, and what others can do, is precisely to the point. In multitude of counsellors there is wisdom, but still more than that, it is a time for quick thinking and acting, and conversation, the exchange of information and views, leads to quicker and more accurate thinking. Let us discuss the war when we meet each other, but

confine the conversation along the lines of efficiency, what we as individuals can actually do. Conserve time and mental energy by restricting the discussion to this line.

We have heard much of the five workers at home to one man on the firing line, in the case of England. With us, however large an army we may have a year hence, the proportion will be much larger. These men at home must be directed, organized, to render the war service the most efficiently. Those in war councils are working nights. Plans are being formulated as rapidly as possible, but it cannot all be done at once. A plan is completed at Washington and a wave spreads over the country, and there will be another and another, innumerable. Eventually the waves will touch almost every one. Let us see to it that we try to be prepared to do our part in the many connections that will develop and the successive waves spread over the country. Patriotism is not simply doing one's duty when the call comes. At this time it covers also trying to anticipate the duty and endeavoring to be prepared for it when the call comes. So shall we exhibit efficiency and show that there is an American brand, that we are not people whose mission is simply to observe the "verboden" signs while we are waiting for the order to come from the monarch.

Universal Service for War.

The decision of Congress for the selective draft by such a large majority, when only a few weeks before the vote, it seemed doubtful whether a bare majority stood in favor of that plan of raising an army, is evidence of a change in view on the part of many. It was, we think, a case of sentimentality being thrust aside by clear judgment of what the circumstances require. All should serve the country, but some can serve better in one manner and some in another and the selection should be made by those who have the information whereby they can make it right.

In a larger sense, the decision of Congress as to the manner in which the army is to be raised should furnish a text for everyone. All are liable for service of one description or another and everyone should hold himself ready. The man who is fit for military service is to hold himself ready until he as an individual is called. Others who are fit for other service should likewise hold themselves ready, and for the service they are fit to perform. In relatively few cases will there be work for civilians of a character distinctly different from their ordinary work.

For the majority it is a case of waiting until the specific call comes, and patience needs to be exercised. The mails were filled with questionnaires some time ago. One that lies before us (a duplicate, filled out, is "on file" somewhere and will probably stay there) winds up: "Have you filled out any other blanks similar to this? . . . If so, what are they?" Many would probably find it difficult to answer that question in detail.

While waiting for the call the thing to do is to keep at one's work, try to do it a little better, a little more systematically, with the desk more thoroughly cleaned off, and with preparation in every way that when the call comes it can be answered the more promptly and with the less dislocation to the work that may have to be left.

And one cannot reflect too often upon the advice recently given by Mr. Howard E. Coffin of the Advisory Commission of the Council of National Defense, that the country needs prosperity more than ever, that everyone should stick to his regular work, keeping the wheels of industry moving. It is no time to discontinue any work or any endeavor unless it is something that involves waste.

Ships the Most Vital Need.

With the many activities that are necessary for a full prosecution of the war, developments of the past few days have tended to emphasize what was pointed out by the authorities at the outset, that the greatest contribution we can make is ships.

The report from Amsterdam is that the German Secretary of the Interior has stated before the Reichstag Main Committee that more than 1,600,000 tons of shipping was destroyed by submarines in February and March, more than 1,000,000 tons of this being British. The figures can represent no more than a slight exaggeration, if any,

judging by the British reports of number of vessels lost, and unofficial statements coming from England that the losses have been greater than generally admitted. The German estimate is that 7,000,000 to 10,000,000 vessel tonnage is still available for England, and that is probably an understatement. It is impossible to make even a rough forecast of how long it would require to destroy the major portion of the remaining shipping. On the one hand, the Germans are doubtless building submarines more rapidly than they are losing, and however short of material they may become it is hardly likely

that such shortage would curtail the rate of new construction. On the other hand, as the number of vessels decreases the submarine fleet will have more difficulty finding them, and the proportion of protection afforded by anti-submarine craft will increase. The situation is left very serious nevertheless. The co-operation of the American navy, as well as of the mosquito fleet now being organized, will tend to reduce the effectiveness of the submarines, by keeping submarines submerged a greater proportion of the time, and this will, perhaps, be a greater influence than that of destroying them, for the records to date do not indicate that any large proportion can actually be destroyed.

Our preparations, apart from the building of vessels, all hinge upon the vessel situation. Our raising larger crops, and conserving food supplies, and our training of an army, all depend upon there being vessels to transport

food and men.

Time is a very important element in this matter. A day saved now may save a week six or nine months hence. If anyone has any suggestions likely to prove valuable, even as to what appears to be a mere detail in this great problem of shipping, he should lay it before the proper authorities. The names have been mis-called so often in the public prints that it may be well to state them precisely. The original body, and to which Cabinet members and others belong, is the Council of National Defense. The active body, with which correspondence should be conducted, is the Advisory Commission of the Council of National Defense. The headquarters of this body are in the Munsey Building, Washington. It has various committees, but we believe the work of handling the mail has been so systematized that correspondence should be initiated simply by addressing the Commission itself.

Topical Talks on Iron.

XLIX.—Slabs and Plates

The steel slab is the raw material of the plate, as the sheet bar is the raw material of sheets or black plates for tinning. Plates, sheets and black plates differ generically from other rolled products in that the reduction from the ingot to the finished product is not all in the same direction. For the purpose of producing the wide surfaces requisite it is necessary that after a certain reduction has been accomplished the further rolling proceed at right angles to the original rolling. It is the slab or sheet bar that is turned around so that its width becomes the length of the finished product.

Sheet bars are produced in grooved rolls, whereby a given mill always produces bars of a certain width, say seven inches. The bars are cut to lengths corresponding to the widths of the finished sheets required, the desired gauge of sheet being produced by varying the thickness of the bar. In actual practice the specifications do not refer to thick-

ness, but to weight per lineal foot.

While the slab stands in precisely the same relation to the plate that the sheet bar does to the sheet, the method of production is not necessarily the same. Slabs produced by a blooming mill are similar to sheet bars in that they are of a width determined by the width of the grooves in the rolls, only the thickness being varied to meet the specification for the finished plate. Slabs, however, are also produced by another class of mill, called the slabbing mill, designed to produce heavier slabs than are conveniently made in a blooming mill. The slabbing mill is a universal mill, i.e., one with a pair of heavy horizontal rolls and a pair of vertical rolls, much shorter and of somewhat less diameter. One of the largest slabbing mills was added to the Gary plant in 1914, with horizontal rolls 36 inches in diameter and vertical rolls 24 inches in diameter the vertical rolls having a horizontal movement whereby they can be brought as

close together as 12 inches or as far apart as 60 inches, producing corresponding widths of slabs. For the largest slabs, weighing up to 20 tons, ingots 30x64 inches in cross section are employed.

The length of the slab becomes the width of the plate, while the combination of width and thickness conforms to the length and thickness of the plate. Thus the slabbing mill enables the plate mill to roll a greater tonnage in a turn than if the plate mill were dependent upon slabs from a blooming mill. The two mills work in harmony, the one do-

ing as much work as it can to keep the other busy, and thus in a sense neither can be said to have a tonnage capacity greater than that of the other.

In general design the slabbing mill is a universal plate mill, though the proportions are different. A plate mill without the vertical rolls is a sheared plate mill, it being necessary to trim the edges, and is three-high instead of two-high, sometimes with a two-high roughing stand. There are three-high universal plate mills, although that is not the more common type.

Spelter Statistics for 1916.

The U. S. Geological Survey have issued their final statistics on spelter for 1916 which show a small increase both in the production and consumption over the preliminary estimate. The figures for 1914, 1915 and 1916 are given below in tons of 2,000 pounds:

Production—	1914.	1915.	1916
From domestic ore	343,418	458,135	563,451
From foreign ore.	9,631	31,384	104,003
Total production	353,049	489,519	667,456
Exports—			
Foreign	5,580	12,776	43,230
Domestic	64,807	118,603	163,137
Total exports ..	70,387	131,379	206,367
Apparent consump.	299,125	365,438	458,428
Stocks end of year	19,984	14,221	17,508

Concerning the zinc smelting capacity the Geological Survey says as follows:

Zinc-Smelting Capacity.

The zinc-smelting* capacity of the United States continued to expand during latter half of 1916, the total number of retorts at the beginning of the year being 156,568, at the midyear 196,040 and at the end of the year 219,418, when, also, 13,632 retorts were under construction or contemplated. The

219,418 retorts reported at the end of the year, at an annual yield under average conditions of four tons of prime western spelter each, would have a capacity of over 875,000 tons as compared with the capacity of 825,000 tons estimated in April, 1916, for the end of the year. This statement means that, given the ore, the smelters could produce 875,000 tons of prime western spelter in 1917, not that they will do so. In view of the account in the Engineering and Mining Journal of March 31, 1917, of the ten years' run of a furnace at Cherryvale, Kans., which had a yearly average of 4.86 tons per retort, the Geological Survey's estimate of four tons per retort under average conditions will probably not be considered excessive.

In 1916, as in 1915, a large number of retorts were engaged in refining prime western spelter by redistillation and were therefore not available to treat ore. A considerable number of retorts were idle during the year, over 11,500 being idle December 31. Thirteen zinc smelters were started and brought to an operating stage during the year and two more were begun. A feature of this smelter building has been the rapidity and secrecy with which gas smelters

have been built in the Southwest. So far as known to the writer, the Western Spelter Co.'s plant at Henryetta, Okla., owned by the Nicholson interests, reached an operating stage before it was mentioned in the technical press. It is reported that the Grasselli Chemical Co. is building a zinc-smelting and acid plant at Terre Haute, Ind., but the United States Geological Survey has not yet been able to learn the details of the plant. In October the Kusa and La Harpe plants at Kusa, Okla., were consolidated as the Kusa Spelter Co.

Electrolytic Zinc Plants

The capacity of the electrolytic zinc

plants in the United States at the end of 1916 hardly came up to the Geological Survey's estimate of 60,000 tons, owing to the failure to complete some plants. Electrolytic plants were in reality producing at the rate of 40,000 tons annually, but with the completion of plants now under construction the capacity will be about 85,000 tons. The production of electrolytic spelter in 1916 was 12,916 tons, of which 1,800 tons was refined from prime western spelter, 887 tons was refined from scrap and drosses, and 10,229 tons were made from ore.

Electrolytic Zinc Plants in the United States

Company.	Location of plant.	Daily spelter capacity.	Remarks.
American Smelting & Refining Co.	Murray, Utah.	Experimental.	Operated in 1916.
Anaconda Copper Mining Co.	Anaconda, Mont.	25 tons	Operated in 1915-16; now idle.
do	Gt. Falls, Mont.	200 tons	Under construction; 100 tons in operation at end of 1916.
Basin Salvage Co.	Basin, Mont.	Experimental	Under construction.
Bully Hill Copper Co.	Bully Hill, Cal.	do	Operated in 1915-16.
Electrolytic Zinc Co.	Baltimore, Md.	10 tons	Operated in 1916.
Judge Mining & Smelting Co.	Park City, Utah.	15 tons	Completed March, 1917.
Mammoth Copper Mining Co.	Kennett, Cal.	25 tons	Will be completed this month.
Reed Zinc Co.	Palo Alto, Cal.	Experimental	Operated in 1914-15; idle in 1916.
River Smelting & Refining Co.	Keokuk, Iowa.	10 tons	Operated in 1916.
Western Metals Co.	Georgetown, Col.	Ore capacity, 100 tons.	Malm process; under construction.

Prices and Value.

In 1915 the average price quoted for prime western spelter for immediate delivery at St. Louis was 14.2 cents a pound. Large quantities of spelter were sold for future delivery at considerable reductions in price. Returns from each producer showed an average price received of 12.4 cents. In 1916 the average price quoted for spelter for immediate delivery at St. Louis was 13.6 cents a pound, and the average price received for spelter of all qualities—prime western, brass special, and high grade—was 13.4 cents. The smaller difference between the price quoted and the price received in 1916 is probably due to increase in domestic consumption, to decrease in sales for future delivery, and to the production of a larger pro-

portion of high grade spelter.

Explanatory Note.

The figures given on the following pages are based on confidential reports made to the United States Geological Survey by each zinc-smelting company in operation in the United States. The figures showing the imports and exports are taken from the records of the Bureau of Foreign and Domestic Commerce of the Department of Commerce, recalculated to short tons, and those for 1916, not having been finally checked, are subject to minor revision. This statement is designed to afford at the earliest practicable date authentic statistics of production of spelter in the United States in 1916. The cooperation of the operators of zinc smelters is cordially acknowledged.

ACTIVE ZINC SMELTERS IN THE UNITED STATES.

(Includes plants working on ore alone, on ore and drosses, and on drosses alone.)

OPERATING COMPANY.

(A—acid plant; not necessarily at smelter.)

Arkansas.

Arkansas Zinc & Smelting Corporation
Athletic Mining & Smelting Co.
Fort Smith Smelter Co.

Colorado.

United States Zinc Co.
Illinois.
American Zinc Co. of Illinois (A)
Collinsville Zinc Smelter
Granby Mining & Smelting Co.(A)
Hegeler Zinc Co.(A)
Illinois Zinc Co.(A)
Matthiessen & Hegeler Zinc Co.(A)
Missouri Zinc Co.
Mineral Point Zinc Co.(A)
National Zinc Co.(A)
Robert Lanyon Zinc & Acid Co.(A)
Sandoval Zinc Co.

Kansas.

American Smelter Co.
American Zinc, Lead & Smelting Co.
do
Chanute Smelter Co.
Cherokee Smelting Co.
Edgar Zinc Co.
Granby Mining & Smelting Co.
Iola Zinc Co.
Joplin Ore & Smelter Corporation
Lanyon Smelting Co.
Owen Zinc Co.
Pittsburg Zinc Co.
Prime Western Smelter Co.(A)
United States Smelting Co.
do
do
Weir Smelting Co.

Location.	Retorts at close of 1915.	Retorts, June 30 1916.	Retorts at close of 1916.	Additional re- torts con- templated or under construction.
Van Buren	2,400	3,200	3,200	.....
Fort Smith .....	.....	.....	.....	2,400
do	2,560	2,560	5,760	.....
.....	.....	4,960	.....	2,400
Pueblo	2,208	1,944	1,984	264
Hillsboro	4,000	4,864	4,864	.....
Collinsville	1,792	2,304	2,304	.....
East St. Louis	3,220	3,220	4,820	800
Danville	3,600	5,100	5,400	.....
Peru	4,640	4,640	4,640	800
La Salle	6,168	6,168	6,168	.....
Beckemeyer	352	352	352	.....
Depue	9,068	9,068	9,068	.....
Springfield	3,200	4,480	4,480	.....
Hillsboro	1,840	3,200	3,200	.....
Sandoval	672	672	672	672
.....	38,552	44,368	45,968	2,272
Pittsburg	896	992	992	.....
Caney	6,080	6,080	6,080	.....
Dearing	4,480	4,480	4,480	.....
Chanute	1,280	1,280	1,280	.....
Bruce	896	896	896	.....
Cherryvale	4,800	4,800	4,800	240
Neodesha	3,760	3,760	3,760	.....
Concrete	660	1,320	1,320	.....
Pittsburg	1,444	1,792	1,792	.....
do	448	448	448	.....
Caney	1,280	1,280	1,280	.....
Pittsburg	910	910	910	.....
Gas	4,868	4,868	4,868	.....
Altos	3,960	4,600	4,600	.....
Iola	3,440	3,440	3,440	.....
La Harpe	1,924	1,924	1,926	.....
Weir .....	.....	.....	288	.....
.....	41,126	42,870	43,800	240

Missouri.

Edgar Zinc Co.	St. Louis	2,000	2,000	.....	.....
Missouri Zinc Smelting Co.	Rich Hill	448	448	.....	.....
Nevada Smelting Co.	Nevada	672	672	.....	.....

Oklahoma.

Bartlesville Zinc Co.	Bartlesville ..	5,184	6,336	.....	.....
do	Blackwell .....	.....	1,000	.....	.....
do	Collinsville ..	10,752	13,440	.....	.....
Bartlesville Zinc Co. (Lanyon-Star plant) ..	Bartlesville ..	3,456	3,456	.....	.....
Eagle-Picher Lead Co.	Henryetta .....	.....	4,000	.....	.....
Henryetta Spelter Co.	do .....	.....	3,000	.....	.....
Kusa Spelter Co.	Kusa	3,720	7,720	.....	.....
National Zinc Co.	Bartlesville ..	4,970	4,970	.....	.....
Oklahoma Spelter Co.	Kusa	1,600	1,600	.....	.....
Quinton Spelter Co.	Quinton .....	.....	1,344	.....	.....
Tulsa Fuel & Manufacturing Co.	Collinsville ..	6,232	6,232	.....	.....
United States Smelting Co.	Cherokee	2,560	5,120	.....	.....
United States Zinc Co.	Sand Springs ..	3,680	8,000	.....	.....
Western Spelter Co.	Henryetta .....	.....	2,400	.....	.....

Pennsylvania.

American Steel & Wire Co.(A)	Donora	3,648	9,120	.....	.....
American Zinc & Chemical Co.(A)	Langeloth	3,648	6,384	.....	.....
New Jersey Zinc Co. (of Pennsylvania) ..	Palmerton	6,720	6,960	.....	.....

West Virginia.

Clarksburg Zinc Co.	Clarksburg ..	3,648	3,648	.....	.....
Grasselli Chemical Co.(A)	do	5,760	5,760	.....	.....
do	Meadowbrook ..	8,592	8,544	.....	.....
United Zinc Smelting Corporation(A)	Moundsville ..	.....	.....	6,912	6,912

Plants With Special Retorts.*

Eastern Zinc Refining Co.	Brooklyn, N.Y. ....	.....	.....	16	.....
John Finn Metal Works	San Francisco ..	.....	.....	1	.....
Michael Hayman & Co.	Buffalo, N.Y.	12	12	.....	.....
Al. M. S. Metal Co.	Trenton, N. J.	24	24	.....	.....
Trenton Smelting & Refining Co.	do	96	96	.....	.....
Wm. Cramp & Sons Ship & Eng. Bldg. Co.,	Philadelphia, ..	32	32	.....	.....

Total large retorts

140

161

151

17

* Large graphite retorts yielding 600-800 pounds of spelter per charge.

17

Steel Plants.

XVIII.—Lackawanna.

The Lackawanna Steel Company produces nearly 4% of the country's total steel output. The concern is one of the oldest of the large steel interests while its plant is one of the newest. The operation is unique in that a large plant was practically abandoned and a still larger plant built in an entirely new location. In the Swank's Directory published in 1874 the Lackawanna Iron & Coal Company, Scranton, Pa., is listed with five blast furnaces, the first two having been built in 1849, and a rolling mill first operated in 1847. At that time the mill comprised 85 single puddling furnaces with seven trains of rolls "steam and water power", with a capacity of 58,500 net tons of rails and 2,500 net tons of merchant iron, the net ton being commonly used in those days. The company was then building a new mill of the same capacity as the old, as well as a Bessemer steel plant. In 1883 the Scranton Steel Company built a steel plant and about ten years later the two enterprises were brought together as the Lackawanna Iron & Steel Company.

About 1899 the company decided to build an entirely new plant, near Buffalo, so as to be on the lake front. At that time it owned five blast furnaces and had two under lease, and the two

steel works, the North Works with a capacity of 280,000 gross tons of Bessemer ingots and the South Works with a capacity of 425,000 tons of ingots, the latter making rails only and the former rails and other products. The plant as originally completed at West Seneca, now called Lackawanna, near Buffalo, involved six blast furnaces and four ten-ton Bessemer converters, an open-hearth steel department of six 60-ton furnaces being immediately added. The first Bessemer steel was made Oct. 13, 1903; the first open-hearth steel Sept. 26, 1904. The Bessemer department is substantially same as originally built, while the open-hearth department has been greatly enlarged. The original open-hearth is now called No. 1 and there have been added five furnaces in 1906, one in 1910 and two in 1912, all of 75 tons capacity, making 14 furnaces in all, while No. 2 open-hearth has been added, with two 200-ton tilting furnaces, for duplexing, completed in 1913, and six 100-ton stationary furnaces, the last two of these having been completed recently.

The seventh blast furnace was completed in 1907 and No. 8 is now in process of erection, to be completed early in 1918.

The Iron and Steel Situation.

Features of April.

Pig iron advanced an average of \$3.20.

Unfinished steel advanced about \$10.

Finished steel advanced an average of \$7.35 a net ton.

Coke supplies became practically normal.

Production of pig iron and steel increased and became approximately equal to capacity.

Steel bookings exceeded shipments.

While it is too early to reach a trustworthy conclusion, the changes effected in the iron and steel market by the entrance of the United States into the war appear to have been of relatively small importance and to have tended to balance each other.

There was a further curtailment in the launching of new projects involving the use of steel, so that the demand for steel for permanent construction was reduced to almost nothing. This, of course, would be a natural result of a state of war existing. There was an increase in buying by jobbers and manufacturing consumers, who desired to have their contracts placed on books for additional periods. The tendency on the whole was in the direction of purchases exceeding shipments. Owing to the special circumstances that order books were opened early in April for second half contracts in sheets and tin plates there was a large mass of contracting injected into a very short period, and the April bookings of the steel industry as a whole probably exceeded the shipments by a wide margin.

Price advances in pig iron and steel were not particularly dissimilar from those that had been occurring in preceding months. While prices in general have been advancing since the beginning of 1915, recent months have represented a period of particularly rapid advances. Thus steel products began to advance August 1, 1916, after a period of several months in which the market was practically stationary. April was the seventh month of this fresh advance.

Pig iron did not advance in the first half of 1915, but advanced an average of \$5.50 a ton in the second half. Then in the first eight months of 1916 it was practically stationary again. In September and the fore part of October advances were by 25 or 50 cents at a time. Late in that month prices took to advancing \$1 or \$2 a ton at a time, and this gait has been continued. Pig iron prices at furnace have lately been in even dollars per ton, no quarters or halves.

The Influence of War.

For the future, we have two criteria, both quite uncertain, on which to base opinion. In the first place we have the history of the first month of war, as briefly referred to above. It would indicate that while the war changes the alignment of buying it does not change the total volume, but leaves the market strengthening as it had been doing before the United States entered the war.

In the second place, we have the experience of England. The first effect of the war was to depress the British iron and steel industry. Later it was made extremely busy, with prices rising until the Government stepped in and fixed maximum prices. Almost the entire British steel industry was converted to the use of the war. For a time the export movement was heavy, but gradually the exports to neutral countries became relatively unimportant, the exports to the colonies diminished and exports to France increased very considerably, these exports being simply war steel that was not put into final form under ownership by the Government.

The experience of the British iron and steel industry is no safe guide, however, for the reason that our steel industry is four times the size of the British industry, and a war demand that would fill the British industry would not fill ours. If we endeavor to use the British experience at all we must consider whether our ordinary industrial demand for steel will be diminished by anything like the extent that characterized the decrease in Eng-

ing to our **composite**, were on an average \$31 a net ton lower than the present market quotations, for shipment at mill convenience. To-day's deliveries may therefore be taken, as a general proposition, as being at \$30 a ton below the market. The willingness of buyers to pay present prices is shown by the contracts they make, but the ability of the public to absorb steel at the present market is not necessarily proved.

The trends in prices are still upwards and the buying is heavy, but what is represented is a state of mind rather than an actual economic situation.

The Future.

In declaring war on Germany the United States undertook a man's job for the richest nation on the globe. It has become clear already that every nerve must be strained not merely to prosecute the war in general, but to reach maximum efficiency at the very earliest moment. Every day counts. Every resource must be employed and will be employed. Some have realized this from the outset, others are only realizing it now and there are many in

the rank and file to whom the knowledge is still to come. It was a natural thing to classify steel into war steel and peace steel or commercial steel, but it has become clear that there can be no distinction made. What has hitherto been peace steel becomes war steel. Tin plate will be used to can food for our army, our navy and our Allies. Agricultural implements will be used for more strenuous cultivation of the soil. Railroad material will be used to make railroads more efficient. Automobile factories will make more trucks and fewer pleasure cars, and thus all along the line. The nation at war will be doing largely the same general kind of work as the nation at peace, only in a much more vigorous way. There is no such thing as the steel market collapsing through lack of demand. Both the producers of steel and the consumers of steel will be kept busy. If prices cannot take care of themselves the Government will take care of them.

Government Buying.

Government steel requirements as already definitely footed up make a

Finished Steel Prices.

(Averaged from daily quotations, f.o.b. Pittsburgh.)

	Shapes	Plates	Bars	Pipe	Wire	Grooved		Sheets			Tin plate	Comp. Fin. steel.
						Wire Nails	Steel Skelp.	Black.	Galv.	Blue Annl.		
1916												
January	1.87	1.90	1.87	76¾	1.98	2.13	1.75	2.60	4.75	2.55	3.75	2.1410
February ...	2.06	2.16	2.06	75½	2.11	2.26	1.94	2.60	4.80	2.65	3.83	2.2988
March	2.36	2.53	2.36	73¾	2.25	2.40	2.24	2.73	4.93	2.85	4.20	2.5579
April	2.50	2.75	2.50	71½	2.25	2.40	2.35	2.89	5.00	2.95	4.70	2.7166
May	2.50	2.83	2.50	70	2.45	2.50	2.35	2.90	5.00	3.00	5.46	2.8043
June	2.50	2.90	2.50	70	2.45	2.50	2.35	2.90	4.80	3.00	5.75	2.8300
July	2.50	2.90	2.50	70	2.45	2.50	2.35	2.90	4.40	2.90	6.00	2.8425
August	2.54	2.94	2.56	70	2.53	2.58	2.35	2.90	4.20	2.90	5.54	2.8588
September ..	2.60	3.00	2.60	69½	2.55	2.60	2.35	2.91	4.20	2.90	5.75	2.9013
October ...	2.63	3.07	2.62	69	2.59	2.64	2.49	3.23	4.50	3.15	5.77	2.9747
November ..	2.86	3.33	2.76	68½	2.79	2.84	2.75	3.72	5.34	3.66	6.40	3.2036
December ..	3.03	3.53	2.93	66	2.95	3.00	2.85	4.40	6.27	3.65	7.18	3.4679
Year	2.50	2.82	2.48	70¾	2.45	2.53	2.34	3.06	4.85	2.99	5.34	2.8009
1917.												
January	3.11	3.61	3.00	64	2.95	3.00	2.85	4.50	6.50	4.25	7.23	3.5249
February ...	3.25	3.75	3.00	61½	2.95	3.00	2.85	4.63	6.75	4.50	7.83	3.6529
March	3.52	4.33	3.27	60½	3.13	3.18	3.50	4.90	7.00	4.70	8.00	3.9454
April	3.70	4.50	3.49	55	3.23	3.28	3.50	5.88	7.40	5.10	7.60	4.196

total of about 600,000 tons, this including the 1917 naval program arranged early in April, and about 500,000 tons more is to be distributed shortly, making somewhat more than a million tons of steel involved in the present program, for navy yard extensions, commercial and war craft and army and camp requirements, plates, shapes, sheets, bars and miscellaneous products in about the order named. Shell steel for the Allies will be taken up later. The amount of tonnage purchased directly by the Government will involve deliveries extending in many cases no doubt throughout the year, and thus

the total will be no large part of the steel production, which is running more than 2,500,000 gross tons of finished rolled steel a month.

The steel that will be called for in various ways by buyers other than the Government, but yet steel that will really be used because the country is at war, will eventually probably amount to a larger tonnage. On the other hand there will be much consumption of steel deferred, either because the steel cannot be secured or because the means to fabricate it and put it to use will not be available.

U. S. Steel Corporation's Operations.

Earnings and Unfilled Orders.

Earnings by Quarters.

Net earnings by quarters since 1911:

Quarter.	1917.	1916.	1915.
1st	\$113,121,018	\$60,714,624	\$12,457,809
2nd	81,126,048	27,950,055	
3rd		85,817,067	38,710,644
4th		105,998,347	51,117,504
Year		333,625,086	130,396,012
	1914.	1913.	1912.
1st	\$17,994,382	\$34,426,802	\$17,826,973
2nd	20,457,596	41,219,813	25,102,266
3rd	22,276,002	38,450,400	30,063,512
4th	10,935,635	23,084,330	35,181,922
Year	71,663,615	137,181,345	108,174,673

Unfilled Orders.

(At end of the Quarter.)

First. Second. Third. Fourth.

1904..	4,136,961	3,192,277	3,027,436	4,696,203
1905..	5,579,560	4,829,655	5,865,377	7,605,086
1906..	7,018,712	6,809,584	7,936,884	4,489,718
1907..	8,043,858	7,603,878	6,425,008	4,642,553
1908..	3,765,343	3,313,876	3,421,977	3,603,527
1909..	3,542,590	4,057,939	4,796,833	5,927,031
1910..	5,402,514	4,237,794	3,158,106	2,674,757
1911..	3,447,301	3,361,058	3,611,317	5,084,761
1912..	5,304,841	5,807,346	6,551,507	7,932,164
1913..	7,468,956	5,807,317	5,003,785	4,282,108
1914..	4,653,825	4,032,857	3,787,667	3,836,643
1915..	4,255,749	4,678,196	5,317,608	7,805,220
1916..	9,331,001	9,640,458	9,522,584	11,547,286
1917.	11,711,644			

Bookings and Shipments.

In this table, first two columns, percentages of bookings and shipments to total capacity, our own estimates, while last column is derived from official reports of "unfilled tonnage" while third percentage column is directly computed from this tonnage column.

	Ship-ments.	Book-ings.	Dif-ference.	Dif-ference.
	%	%	%	Tons.
1915—				
March	67	60	— 7	— 89,622
April	71	63	— 8	— 93,505
May	76	85	+ 9	+102,354
June	79	113	+34	+413,598
July	83	104	+21	+250,344
August	91	89	— 2	— 20,085
September .	98	133	+35	+409,163
October ...	103	172	+69	+847,834
November .	102	186	+84	+1,024,037
December .	102	152	+50	+615,731
1916—				
January ...	102	112	+10	+116,547
February ..	102	157	+55	+646,199
March	104	164	+60	+762,035
April	104	146	+42	+498,550
May	104	82	—22	—297,340
June	104	82	—22	—297,340
July	90	86	— 4	— 46,866
September .	96	87	— 9	—137,773
October ...	106	145	+39	+492,676
November .	104	189	+85	+1,043,282
December .	96	136	+40	+488,744
1917—				
January ...	92	86	— 6	— 73,232
February ..	92	101	+ 9	+102,642
March	97	107	+10	+134,947

Total unfilled obligations, March 31, 1917, 11,711,644 tons.

Tin Plate Movement.

United States imports and exports of tin plate in gross tons have been as follows, the imports of course including those for drawback purposes:

Imports. Exports.

1906	56,983	12,082
1907	57,773	10,293
1908	58,490	11,878
1909	62,592	9,327
1910	66,640	12,459
1911	14,098	61,466
1912	2,053	81,694
1913	20,680	57,812
1914	15,411	59,549
1915	2,350	154,642
1916	1,008	227,391
January, 1915	1,608	7,014
February	265	5,834
March	53	10,500
April	44	9,084
May	24	7,218
June	75	7,582
July	71	13,895
August	50	21,939
September	31	22,271
October	15	17,018
November	54	15,538
December	61	15,972
January, 1916	62	12,178
February	107	13,534
March	44	20,364
April	179	21,385
May	39	25,585
June	91	29,751
July	150	18,760
August	105	18,757
September	51	18,770
October	111	14,195
November	38	15,816
December	34	18,229
January, 1917	31	23,408
February	35	14,632

The Liberty Steel Company, Warren, Ohio, which will build new sheet metal plant, has placed a contract for its building with the Hunter Construction Company, Youngstown, Ohio, and for its mill equipment with the Hyde Park Foundry & Machine Company, Hyde Park, Pa.

Car and Locomotive Buying.

Freight Cars Ordered.

1915: Domestic	105,000
Export	20,000
Total, 1915	125,000
1916: Domestic	169,000
Export	29,000
Total, 1916	194,000
1917: Domestic	29,215
Export	18,500
January	16,840
February	19,566
March	9,687
April	1,622

Locomotives Ordered.

1915: Domestic	1,500
Export	800
Total, 1915	2,300
1916: Domestic	2,850
Export	2,900
Total, 1916	5,750
1917: Domestic	313
Export	514
January	807
February	299
March	232
April	324

STRUCTURAL STEEL LETTINGS

Reports of the Bridge Builders' and Structural Society, lettings of structural steel contracts by months in percentage of the fabricating capacity, capacity being now about 180,000 tons a month.

	1914.	1915.	1916.	1917.
January	62	25	69	61½
February	63	30	75	59
March	76	64	102	68
April	88	62½	72½	
May	57	61	80	
June	56½	80	58	
July	68	86	47½	
August	27½	85	64	
September	38½	67	52½	
October	35	78	77	
November	20	105	78	
December	35	121	86	
Average	52¼	72	71¾	

The Nonrust Terne Plate Company, New York, has been incorporated in Delaware with capital of \$500,000 to manufacture tin and tin plate. M. L. Hills, John R. Kearns and Frank J. Cantlin, New York, are the incorporators.

Comparison of Metal Prices.

	Range for 1915		Range for 1916		Range for 1917		Closing, April 20,
	High.	Low.	High.	Low.	High.	Low.	1917.
Pig Iron							
Bessemer, valley	21.00	13.60	35.00	20.00	41.00	35.00	43.00
Basic, valley	18.00	12.50	30.00	17.75	40.00	30.00	40.00
No. 2 foundry, valley	18.50	12.50	30.00	18.25	40.00	30.00	40.00
No. 2X fdy. Philadelphia.	19.50	14.00	30.75	19.50	42.75	30.75	42.75
No. 2 foundry, Cleveland ..	18.80	13.00	30.95	18.50	40.30	30.95	40.30
No. 2X foundry, Buffalo.	18.00	11.75	35.00	18.00	40.00	35.00	40.00
No. 2 foundry, Chicago ..	18.50	13.00	30.00	18.00	41.00	30.00	41.00
No. 2 South'n Birmingham	14.50	9.25	25.00	14.00	35.00	24.00	35.00
Scrap Iron and Steel.							
Melting steel, Pittsburgh.	18.00	11.00	27.00	16.00	29.00	22.00	28.50
Heavy steel scrap, Phila. ..	16.25	9.50	24.50	14.75	26.00	20.50	25.50
Heavy melt. steel, Chicago	15.25	8.75	24.00	14.50	28.00	21.50	27.00
No. 1 R. R. wrought, Pitts.	17.25	10.75	29.00	17.50	31.00	19.50	30.50
No. 1 cast, Pittsburgh	15.00	11.00	23.50	14.75	25.00	19.75	24.75
Iron and Steel Products.							
Bessemer rails, mill	28.00	28.00	38.00	28.00	38.00	38.00	38.00
Iron bars, Pittsburgh	1.90	1.20	3.25	1.90	4.75	3.25	4.75
Iron bars, Philadelphia ...	2.06	1.12½	3.16	2.06	3.41	3.16	3.41
Steel bars, Pittsburgh	1.80	1.10	3.00	1.85	3.35	3.00	3.35
Tank plates, Pittsburgh ..	1.60	1.10	3.60	1.85	4.50	3.50	4.50
Structural shapes, Pitts. ..	1.80	1.10	3.10	1.85	3.60	3.10	3.60
Grooved steel skelp, Pitts. .	1.75	1.12½	2.85	1.75	3.50	2.85	3.50
Black sheets, Pittsburgh ..	2.60	1.70	4.50	2.60	6.50	4.50	6.50
Galv. sheets, Pittsburgh ..	5.00	2.65	6.50	4.15	8.00	6.25	8.00
Tin plate, Pittsburgh	3.60	3.10	7.50	3.75	8.00	7.00	8.00
Wire nails, Pittsburgh	2.10	1.50	3.00	2.10	3.50	3.00	3.50
Steel pipe, Pittsburgh	79%	81%	64%	78%	55%	64%	55%
Connellsville Coke at ovens.							
Prompt furnace	3.50	1.50	12.00	2.50	14.00	8.00	7.50
Prompt foundry	3.75	2.00	12.00	3.25	15.00	10.00	10.00
Metals—New York.							
Straits tin	57.00	32.00	56.00	37.50	58.75	42.50	58.50
Lake copper	23.00	13.00	35.00	23.00	36.00	28.00	30.75
Electrolytic copper	23.00	12.80	36.00	23.00	37.00	27.75	31.25
Casting copper	22.00	12.70	34.00	22.00	34.00	26.50	28.00
Sheet copper	27.25	18.75	42.00	28.00	44.00	40.00	40.00
Lead (Trust price)	7.00	3.70	7.50	5.50	9.50	7.50	9.50
Spelter	27.25	5.70	21.17	8.37	11.05	8.92½	9.61¼
Chinese & Jap. antimony.	40.00	13.00	45.00	10.50	60.00	14.25	32.25
Aluminum, 98-99%	60.00	18.75	67.00	53.00	64.00	56.00	60.00
Silver	56½	46½	77½	55½	79	71½	74½
St. Louis.							
Lead	7.50	3.50	8.25	5.45	10.00	7.30	9.75
Spelter	27.00	5.55	21.00	8.20	10.87	8.75	9.43¼
Sheet zinc (f.o.b. smelter)	33.00	9.00	25.50	15.00	27.00	19.00	19.00
London							
Standard tin, prompts	£ 190	£ 148¼	£ 205	£ 161½	£ 200	£ 180¾	£ 229½
Standard copper, prompts	86¼	57½	153	84	146	130	130
Lead	30¼	18¼	36½	27¾	36½	30½	30½
Spelter	110	28½	110	44	75	45½	54
Silver	27¼d	22¾d	70d	26½d	88d	47½d	47½d

Comparison of Security Prices.

	Range for 1915		Range for 1916		Range for 1917		Closing, April 30,
Iron and Industrial Stocks.	High.	Low.	High.	Low.	High.	Low.	1917.
Albion-Chalmers Mfg.	49 1/8	7 1/2	38	19	30 1/8	20 1/8	26 1/8
Albion-Chalmers Mfg. pfd.	85 1/8	33	92	70 1/2	86 7/8	79 1/4	83 1/8
American Can.	68 1/2	25	68 1/2	44	51 1/8	36	46
American Can pfd.	113 1/2	89	115 1/8	107 1/8	110 5/8	103 1/8	104
American Car & Fdy.	98	40	78 1/2	52	74 1/2	54	67 1/2
American Locomotive.	74 1/2	19	98 1/4	58	82 1/4	62 1/2	68 1/8
American Smelt'g & Refining.	108 1/8	56	123 1/2	88 1/2	110 1/4	95 1/2	101
American Steel Foundries.	74 1/8	24 1/8	73	44	65 7/8	52	59 1/2
American Zinc, Lead & Smelt'g.	71	67 1/4	97 7/8	29 3/8	41 3/8	29	44 1/4
Anaconda Copper.	91 1/8	49 1/2	105 1/8	77	86 1/2	70	79 3/4
Baldwin Locomotive.	174 1/2	265 1/8	118 1/8	52	64 1/2	43	55 1/8
Bethlehem Steel.	609	46 1/4	700	415	545	119	135
Bethlehem Steel pfd.	184	91	168	126	135	117 1/4	128
Chino Copper.	54 1/8	32 1/4	74	46 1/8	63 1/4	48 1/8	54 1/8
Colo. Fuel & Iron Co.	66 1/2	24 1/2	63 1/4	38 1/8	54 1/8	38 1/2	49 1/4
Crucible Steel.	109 1/8	18 1/4	99 1/2	50 1/4	73 1/4	50 1/2	62 1/2
Crucible Steel pfd.	112 1/2	84	124 1/2	108 1/2	113 1/2	107	108
Druggs-Seabury. ....	...	...	119 1/4	45 1/8	87 1/8	39 7/8	79 1/4
General Electric.	185 1/2	148	187 1/4	159	174 1/4	161	163 1/4
Granby Consolidated.	91	79 1/4	120	80	92 1/8	75 1/8	81
Great Northern Ore Prop.	54	25 1/4	50 1/4	32	48 1/8	27 1/4	33 1/2
Gulf States Steel. ....	...	...	193	71	137	99 1/2	126
International Harv. of N. J.	114	90	126 7/8	108 1/2	123	111 1/8	113 1/2
Inter. Harv. of N. J. pfd.	120	100	122	114	121	114	114 1/8
International Harv. Corp.	85	55	90 1/4	68 1/8	88	75 1/2	78
Inter. Harv. Corp. pfd.	114	90 1/2	114 1/4	104 1/8	114	108	108
Lackawanna Steel.	94 1/4	28	107	64	89 1/4	70 1/8	85
National Enam. & Stamp.	36 1/8	9 1/2	36 1/2	19 1/4	36	24	32 1/2
National Enam. & Stamp. pfd.	97	79	100 1/2	90 1/8	101	95 1/8	96 1/8
National Lead.	70 1/4	44	74 1/8	57	63 1/4	52	55 1/4
National Lead, pfd.	115	104 1/4	117 1/8	111 1/4	114	108 1/4	109 1/4
New York Air Brake.	164 1/2	56 1/2	186	118	156	128	139
Pressed Steel Car.	78 1/4	25	88 1/4	42 1/2	83 1/4	72	75
Pressed Steel Car. pfd.	106	86	108	81 1/2	106	100 1/4	102
Railway Steel Spring.	54	19	61 1/4	32	55 1/8	43	50
Railway Steel Spring pfd.	102	86 1/2	104 1/4	95 1/4	101	94	97 1/2
Ray Consol'dated Copper.	27 1/2	15 1/4	37	29	32 1/4	23	29 1/8
Republic Iron & Steel.	57 1/4	19	93	42	86 1/4	60	81 1/4
Republic Iron & Steel, pfd.	112 1/2	72	117	101	105 1/4	99	102 1/8
Sloss-Sheffield.	96 1/8	22	96 1/4	57	74 1/4	42 7/8	49
Sloss-Sheffield, pfd.	102	85	103 1/2	91 1/2	99	93	93
Texas Company.	247	140	241 1/2	177 1/4	243	200	210
U. S. Cast Iron Pipe.	47 1/8	8	28 1/8	16 1/8	23 1/2	17	20 1/8
U. S. Cast Iron Pipe pfd.	55 1/2	27 1/2	67 1/2	48 1/2	62 1/4	54	56
U. S. Smelting & Refining. ....	...	...	84 1/8	57	67 1/2	52 1/4	55 1/8
U. S. Smelting & Refining pfd. ....	...	...	53 1/2	50	52 1/4	49 1/2	49 1/8
U. S. Steel Corporation.	89 1/2	38	129 1/4	79 1/2	118 1/4	99	116 1/8
U. S. Steel Corporation, pfd.	117	102	124	115	121 1/4	116 1/2	118 1/4
Utah Copper.	87 1/2	48 1/2	130	74 1/2	117 1/2	97	115 1/4
Virginia Iron, Coal & Coke.	74	36	72 1/4	31	77	46	71
Westinghouse Elec. & Mfg.	74 1/4	32	71 1/8	51	55 1/2	46	50

Railroad Earnings.

Railroad earnings per mile of road, having annual operating revenues above \$1,000,000, this being about 230,000 miles or about 90% of the total steam railway mileage; compiled by the Bureau of Railway Economics from reports furnished the Interstate Commerce Commission.

	1912-14			1914-15			1915-16		
	Revenue.	Expense.	Net.	Revenue.	Expense.	Net.	Revenue.	Expenses.	Net.
July	\$1,183	\$837	\$346	\$1,127	\$786	\$341	\$1,130	\$750	\$380
August ..	1,244	856	388	1,174	788	386	1,190	764	426
September	1,257	854	403	1,185	783	402	1,251	774	477
October ..	1,314	891	423	1,171	787	384	1,323	815	508
November	1,180	884	337	1,026	734	292	1,303	801	502
December.	1,116	821	296	993	730	263	1,253	802	451
January ..	1,021	795	226	939	718	221	1,133	798	335
February ..	914	746	168	900	680	220	1,141	801	340
March	1,091	801	290	1,015	722	293	1,260	844	416
April	1,038	782	256	1,013	724	289	1,223	827	396
May	1,047	800	247	1,044	735	309	1,307	857	450
June	1,097	789	308	1,094	732	362	1,302	851	451
Fiscal year	13,483	9,801	3,682	12,678	8,915	3,763	14,818	9,684	5,134

	1916-17		
	Revenue.	Expenses.	Net.
July	\$1,315	\$848	\$467
August ..	1,418	882	536
September	1,409	881	528
October ..	1,466	910	556
November	1,396	894	502
December	1,345	905	440
January ..	1,301	930	371
February ..	1,147	899	248

Wage Scale Averages.

Sworn averages of prices obtained by mills for shipments in months named, used in fixing wages under Amalgamated Association sliding scales. Figures represent the rates used, the actual ascertained averages lying between the figure given and the one five points higher. Base size of iron bars; average of 26, 27, and 28 gauges black sheets; tin plate per base box, 100-pound.

Bar Iron.

	1914.	1915.	1916.	1917.
Jan.-Feb.	1.1590	1.024	1.40	2.35
Mar.-April	1.176	1.087	1.60	
May-June	1.1257	1.10	1.85	
July-Aug.	1.0928	1.15	1.95	
Sept.-Oct.	1.0847	1.15	2.00	
Nov.-Dec.	1.037	1.30	2.15	
Year's av.	1.1125	1.144	1.83	

Sheets and Tin Plates.

	Sheets.		Tin Plates.	
	1916.	1917.	1916.	1917.
Jan.-Feb.	2.25	3.40	3.50	4.95
Mar.-April	2.50		3.70	
May-June	2.60		3.90	
July-Aug.	2.70		4.05	
Sept.-Oct.	2.75		4.10	
Nov.-Dec.	2.80		4.25	
Year's av.	2.60		3.92	

Pig Iron Production.

Rates per annum, including charcoal pig.

January, 1916	37,850,000
February	39,200,000
March	39,600,000
April	39,600,000
May	39,800,000
June	39,500,000
July	38,350,000
August	39,200,000
September	39,300,000
October	41,700,000
November	40,700,000
December	37,700,000
January	37,450,000
February	34,750,000
March	38,600,000
April	40,900,000
On May 1st	41,100,000

Actual production:

1910	27,303,567
1913	30,966,152
1914	23,332,244
1915	29,916,213
1916	39,434,797

Composite Steel.

Computation for May 1, 1917:

Pounds.	Group.	Price.	Extension.
2 1/2	Bars	3.50	8.750
1 1/2	Plates	4.50	6.750
1	Shapes	4.00	6.000
1	Pipe (42-50)	4.40	6.600
1	Wire rods	3.50	5.250
1	Sheets (28 b'd)	6.50	6.000
	Tin plates	8.00	4.000
10 pounds			43.850
One pound			4.385

Averaged from daily quotations:

	1913.	1914.	1915.	1916.	1917.
Jan.	1.7707	1.5394	1.4554	2.1410	3.553
Feb.	1.7625	1.5794	1.4716	2.2288	3.653
Mar.	1.7646	1.5648	1.5098	2.5579	3.945
Apr.	1.7742	1.5337	1.5357	2.7165	4.196
May	1.7736	1.5078	1.5381	2.8043	
June	1.7719	1.4750	1.5312	2.8300	
July	1.7600	1.4805	1.5692	2.8425	
Aug.	1.7400	1.5241	1.6059	2.8588	
Sept.	1.7093	1.5632	1.6506	2.9013	
Oct.	1.6779	1.5206	1.7264	2.9747	
Nov.	1.6203	1.4769	1.9089	3.2036	
Dec.	1.558	1.4324	2.0329	3.4679	
Year	1.7241	1.5182	1.6280	2.8009	

Scrap Iron and Steel Prices.

	Melting Steel, Pitts.	Bundled Sheet Steel, Pitts.	No. 1 R. R., Pitts.	No. 1 Wrought Cast. Steel, Pitts.	No. 1 Heavy Steel, Phila.	Ch'go.
1915—						
Oct.	14.50	12.00	13.75	13.35	14.50	12.00
Nov.	16.12	12.55	15.35	13.90	14.65	13.95
Dec.	17.65	13.15	17.10	14.95	15.60	15.25
Year	13.25	10.54	12.26	12.10	12.54	10.90
1916—						
Jan.	17.75	13.40	18.00	15.10	16.30	15.60
Feb.	17.20	13.60	18.75	15.35	16.25	15.75
Mar.	18.40	14.80	19.15	15.75	17.15	16.75
Apr.	18.00	14.75	19.25	16.00	18.00	16.75
May	17.00	13.65	19.65	16.10	17.00	15.90
June	16.25	13.00	19.00	15.40	15.45	14.80
July	16.70	12.50	18.80	15.30	15.00	14.30
Aug.	16.25	11.70	18.15	15.00	15.00	15.30
Sept.	16.61	11.65	18.35	15.00	15.00	16.00
Oct.	18.25	11.65	19.30	15.80	15.65	17.35
Nov.	22.50	13.75	21.25	17.75	18.25	21.00
Dec.	35.50	16.00	27.20	21.40	23.95	23.65
Year	18.37	13.38	19.73	16.16	16.92	16.90
1917—						
Jan.	23.50	16.25	23.75	20.75	22.75	23.50
Feb.	22.50	15.75	22.50	19.75	21.15	22.25
Mar.	24.00	16.25	26.00	22.00	23.00	24.50
Apr.	27.75	17.25	30.50	24.00	25.50	27.50

Composite Pig Iron.

Computation for May 1, 1917:

One ton Bessemer, valley	\$43.00
Two tons basic, valley (40.00)	80.00
One ton No. 2 foundry, valley	40.00
One ton No. 2 foundry, Philadelphia	42.75
One ton No. 2 foundry, Buffalo	40.25
One ton No. 2 foundry, Cleveland	40.50
One ton No. 2 foundry, Chicago	41.50
Two tons No. 2 Southern, foundry Cincinnati (37.00)	74.00
Total ten tons	402.60
One ton	40.260

Averaged from daily quotations:

	1913.	1914.	1915.	1916.	1917.
Jan.	17.391	13.492	13.070	18.690	30.752
Feb.	17.140	13.721	13.079	18.564	30.946
Mar.	16.775	13.843	12.971	18.857	34.353
April	16.363	13.850	12.914	19.031	39.140
May	15.682	13.808	13.206	18.965	
June	14.968	13.606	13.047	18.552	
July	14.578	13.520	13.125	18.585	
Aug.	14.565	13.516	14.082	18.514	
Sept.	14.692	13.503	14.895	18.697	
Oct.	14.737	13.267	15.213	20.192	
Nov.	14.282	13.047	16.398	25.243	
Dec.	13.838	13.073	17.987	30.082	
Year	15.418	13.520	14.150	20.306	

Unfinished Steel and Iron Bars.

(Averaged from daily quotations.)

	Billets, Pitts.	Sheet Bars, Pitts.	Rods, Pitts.	—Iron bars, deliv.— Phila.	Pitts.	Ch'go.
1915—						
Nov.	26.20†	26.50†	36.00	1.72	1.54	1.51
Dec.	30.73†	30.73†	39.50	1.99	1.83	1.69
Year	13.26	10.54	12.26	12.40	12.54	10.90
1916—						
Jan.	32.50†	32.50†	42.00	2.24	2.02	1.79
Feb.	34.00†	34.00†	48.00	2.41	2.25	1.92
Mar.	41.00†	41.00†	56.00	2.56	2.40	2.17
Apr.	45.00	45.00	60.00	2.62	2.50	2.35
May	43.00	43.00	59.00	2.66	2.60	2.35
June	42.00†	42.00†	58.00	2.66	2.60	2.35
July	42.50†	42.50†	58.00	2.66	2.60	2.35
Aug.	46.00	46.00	58.00	2.66	2.60	2.35
Sept.	47.00	45.00	58.00	2.66	2.70	2.35
Oct.	48.00	48.00	59.00	2.66	2.75	2.35
Nov.	52.75	54.00	65.00	2.66	2.85	2.50
Dec.	56.96	56.96	70.00	3.02	3.10	2.89
Year	44.23	44.17	57.53	2.57	2.59	2.31
1917—						
Jan.	63.50	63.50	75.00	3.16	3.25	3.00
Feb.	65.00	65.00	77.00	3.16	3.25	3.00
Mar.	68.00	68.00	79.00	3.41	3.46	3.00
Apr.	75.00	75.00	85.00	3.41	3.62	3.25

† Premium for open-hearth.

Price Changes of Iron and Steel Products From January 3, 1916 to Date.

Price changes in merchant bars, structural shapes, plates, wire nails, merchant pipe, sheets and tin plates are given below, with dates. These are the commodities used in compiling our composite finished steel. In some cases the dates named are those upon which prominent producers announced price changes, but more frequently the rates are merely those upon which our quotations were changed. A few other price changes are included.

1916—				1916—			
Jan. 3	Tin plate	3.60	to 3.15	May 1	Wire nails	2.40	to 2.50
" 3	Blue ann. sheets	2.25	to 2.35	" 3	Tin plates	5.00	to 5.50
" 4	Bars	1.80	to 1.85	" 16	Plates	2.75	to 2.90
" 4	Plates	1.80	to 1.85	June 7	Galv. sheets	5.00	to 4.75
" 4	Shapes	1.80	to 1.85	" 16	Tin plate	5.50	to 6.00
" 4	Pipe (with extra 2 1/2%)	1.80	to 1.75	July 7	Blue ann. sheets	3.00	to 2.90
" 5	Blue ann. sheets	2.35	to 2.40	" 7	Galv. sheets	4.75	to 4.50
" 7	Boiler tubes	68 1/2%	to 66 1/2%	Aug. 1	Tin plate	6.00	to 5.50
" 12	Blue ann. sheets	2.40	to 2.50	" 7	Wire nails	2.50	to 2.60
" 14	Boiler tubes	66 1/2%	to 64 1/2%	" 15	Bars	2.50	to 2.60
" 19	Blue ann. sheets	2.50	to 2.65	" 18	Shapes	2.50	to 2.60
" 21	Bars	1.85	to 1.90	" 18	Plates	2.90	to 3.00
" 21	Plates	1.85	to 2.00	" 25	Galv. sheets	4.25	to 4.15
" 21	Shapes	1.85	to 1.90	Sept. 7	Pipe	70 1/2%	to 69 1/2%
" 21	Pipe	77 1/2%	to 76 1/2%	" 7	Boiler tubes	56 1/2%	to 54 1/2%
" 24	Wire nails	2.10	to 2.20	" 20	Galv. sheets	4.15	to 4.25
Feb. 7	Bars	1.90	to 2.00	" 28	Sheets	2.90	to 3.00
" 7	Plates	2.00	to 2.10	Oct. 3	Blue ann. sheets	2.90	to 3.00
" 7	Shapes	1.90	to 2.00	" 4	Galv. sheets	4.25	to 4.30
" 14	Wire nails	2.20	to 2.30	" 6	Sheets	3.00	to 3.10
" 15	Pipe	76 1/2%	to 75 1/2%	" 7	Tin plate	5.50	to 6.00
" 21	Bars	2.00	to 2.25	" 13	Sheets	3.10	to 3.25
" 21	Plates	2.10	to 2.35	" 13	Galv. sheets	4.30	to 4.40
" 21	Shapes	2.00	to 2.25	" 13	Tin plate	6.00	to 5.75
" 21	Tin plate	5.75	to 4.00	" 16	Galv. sheets	4.40	to 4.50
" 29	Pipe	75 1/2%	to 74 1/2%	" 19	Wire nails	2.60	to 2.70
" 29	Boiler tubes	64 1/2%	to 63 1/2%	" 20	Sheets	3.25	to 3.35
Mar. 1	Wire nails	2.30	to 2.40	" 20	Blue ann. sheets	3.00	to 3.15
" 8	Black sheets	2.60	to 2.75	" 24	Plates	3.00	to 3.25
" 8	Blue ann. sheets	2.65	to 2.90	" 25	Bars	2.60	to 2.70
" 13	Bars	2.25	to 2.35	" 25	Shapes	2.60	to 2.70
" 13	Plates	2.35	to 2.60	" 25	Grooved skelp	2.35	to 2.50
" 13	Shapes	2.25	to 2.35	" 26	Sheets	3.35	to 3.40
" 15	Steel pipe	74 1/2%	to 73 1/2%	" 26	Galv. sheets	4.50	to 4.75
" 15	Boiler tubes	63 1/2%	to 61 1/2%	" 27	Blue ann. sheets	3.15	to 3.30
" 23	Bars	2.35	to 2.50	" 30	Tin plate	5.75	to 6.00
" 24	Shapes	2.35	to 2.50	" 31	Shapes	2.70	to 2.80
" 28	Plates	2.60	to 2.75	Nov. 1	Boiler tubes	54 1/2%	to 52 1/2%
" 29	Sheets	2.35	to 2.85	" 6	Wire nails	2.70	to 2.85
" 29	Steel pipe	73 1/2%	to 72 1/2%	" 8	Sheets	3.40	to 3.55
" 29	Boiler tubes	61 1/2%	to 60 1/2%	" 15	Tin plate	6.00	to 6.25
April 5	Sheets	2.85	to 2.90	" 15	Grooved skelp	2.50	to 2.60
" 15	Boiler tubes	60 1/2%	to 59 1/2%	" 15	Pipe	69 1/2%	to 68 1/2%
" 16	Tin plate	4.50	to 5.00	" 18	Galv. sheets	5.00	to 5.50
" 24	Pipe	70 1/2%	to 70 1/2%	" 20	Tin plate	6.25	to 7.00
				" 20	Sheets	3.65	to 4.00

1916—			
Nov. 21	Bars	2.70	to 2.90
" 21	Plates	3.25	to 3.50
" 21	Shapes	2.80	to 3.00
" 21	Blue ann. sheets	3.30	to 3.40
" 21	Boiler tubes	52%	to 46%
" 25	Grooved skelp	2.60	to 2.85
" 27	Blue ann. sheets	3.40	to 3.50
" 27	Galv. sheets	5.50	to 5.75
" 27	Wire nails	2.85	to 3.00
Dec. 4	Pipe	68%	to 66%
" 4	Sheets	4.00	to 4.25
" 5	Galv. sheets	5.75	to 6.00
" 6	Blue ann. sheets	3.50	to 3.65
" 11	Sheets	4.25	to 4.50
" 11	Galv. sheets	6.00	to 6.25
" 20	Tin plate	7.00	to 7.50
" 21	Bars	2.90	to 3.00
" 21	Shapes	3.00	to 3.10
" 21	Plates	3.50	to 3.60
" 26	Blue ann. sheets	3.75	to 4.00
" 30	Pipe	66%	to 64%

1917—			
Jan. 10	Galv. sheets	6.25	to 6.50
" 10	Blue ann. sheets	4.00	to 4.25
" 16	Tin plate	7.00	to 7.50
" 30	Shapes	3.10	to 3.25
" 30	Plates	3.60	to 3.75
Feb. 6	Tin plate	7.00	to 8.00
" 14	Pipe	64%	to 62%
" 15	Sheets	4.50	to 4.75
" 16	Blue ann. sheets	4.25	to 4.50
Mar. 5	Pipe	62%	to 60%
" 5	Wire nails	3.00	to 3.20
" 8	Bars	3.00	to 3.35
" 8	Plates	3.75	to 4.50
" 8	Shapes	3.25	to 3.60
" 14	Sheets	4.75	to 5.00
" 14	Galv. sheets	6.50	to 6.75
" 20	Blue ann. sheets	4.50	to 4.75
" 20	Galv. sheets	6.75	to 7.00
Apr. 2	Tin plate	8.00	to 7.50
" 2	Pipe	60%	to 55%
" 3	Sheets	5.00	to 5.50
" 3	Blue ann. sheets	4.75	to 5.00
" 4	Galv. sheets	6.75	to 7.00
" 18	Sheets	5.50	to 6.00
" 18	Blue ann. sheets	5.00	to 5.50
" 18	Galv. sheets	7.00	to 7.50
" 20	Sheets	6.00	to 6.50
" 20	Blue ann. sheets	5.50	to 6.00
" 20	Galv. sheets	7.50	to 8.00
" 23	Wire nails	3.20	to 3.50
" 24	Bars	3.35	to 3.50
" 24	Shapes	3.60	to 4.00
" 25	Tin plate	7.50	to 8.00
May 3	Pipe	55%	to 49%

Steel Making Pig Iron Averages.

Bessemer and basic pig iron averages, compiled by Messrs. W. P. Snyder & Company from sales in the valley market of 1,000 tons and over.

	Bessemer.		Basic.	
	1916.	1917.	1916.	1917.
Jan. ..	\$20.645	\$35.00	\$17.833	\$30.00
Feb. ..	20.7186	35.418	17.984	30.00
Mar. ..	20.8625	36.423	18.25	32.507
April ..	20.70	41.332	18.00	37.996
May ..	20.833		18.1607	
June ..	21.00		18.00	
July ..	21.00		18.00	
Aug. ..	21.00		18.00	
Sept. ..	21.9346		18.63	
Oct. ...	23.6576		20.3086	
Nov. ..	29.12		27.229	
Dec. ..	34.213		30.09	
Year ..	22.9316		20.0329	

Above prices are f. o. b. valley furnace; delivered Pittsburgh is 95 cents higher.

British Iron And Steel Exports.

	Pig Iron.	Rails.	Tin Plate.	Total.*
1914 ..	780,763	433,507	435,392	3,972,348
1915 ..	611,227	242,267	368,778	3,248,046
1915—				
Sept. ..	53,068	15,800	20,002	249,501
Oct. ..	78,973	13,640	31,968	312,141
Nov. ..	86,109	12,760	25,556	308,319
Dec. ..	74,892	9,937	30,641	259,782
Year ..	611,227	242,267	368,778	3,248,046
1916—				
Jan. ..	78,271	3,151	26,271	292,203
Feb. ..	84,351	3,905	27,289	283,250
Mar. ..	87,383	3,366	29,182	307,488
April ..	82,976	10,510	23,337	293,897
May ..	97,967	4,103	41,868	395,750
June ..	77,487	3,243	30,351	310,595
July ...	69,999	3,485	38,174	298,929
Aug. ..	95,655	1,983	34,124	319,926
Sept. ..	72,683	2,712	19,226	231,335
Oct. ..	72,187	6,929	10,929	241,261
Nov. ..	49,986	16,411	4,571	224,554
Dec. ..	48,542	2,317	14,248	158,609
Year ..	917,396	50,275	321,710	3,357,829
1917—				
Jan. ..	61,201	5,935	16,515	210,124
Feb. ..	59,970	851	14,000	186,768

* Includes scrap, pig iron, rolled iron and steel, cast and wrought iron manufactures, bolts, nuts, etc., but not finished machinery, boilers, tanks, etc.

Iron and Steel Imports and Exports.

Value of Tonnage and Non-Tonnage.

	1912.	1913.	1914.	1915.	1916.	1917.
January	\$18,451,914	\$25,141,409	\$16,706,836	\$18,053,421	\$51,643,807	\$108,423,640
February	21,801,570	24,089,871	16,520,260	16,470,751	54,145,496	85,117,010
March	24,474,799	27,221,210	20,551,137	20,985,505	58,300,297	
April	26,789,853	27,123,044	20,639,569	25,302,649	58,722,411	
May	28,050,247	26,718,970	19,734,045	26,536,612	72,918,913	
June	24,795,802	25,228,346	18,927,938	31,730,132	76,257,844	
July	24,917,952	24,170,704	16,737,552	35,892,106	70,745,162	
August	25,450,107	23,947,440	10,428,817	37,726,657	86,296,703	
September ...	23,286,040	22,831,082	12,531,102	38,522,175	90,895,592	
October	23,271,559	25,193,887	16,455,832	43,299,457	82,010,972	
November	26,406,425	20,142,141	15,689,401	48,056,220	77,570,840	
December	23,750,864	22,115,701	14,939,613	45,825,147	88,536,958	
Totals	\$289,128,420	\$293,934,160	\$199,861,684	\$388,400,832	\$867,323,044	\$193,540,650

Exports of Tonnage Lines,---Gross Tons.

	1910.	1911.	1912.	1913.	1914.	1915.	1916.	1917.
January	118,681	152,362	151,575	249,493	118,770	140,550	357,122	608,286
February	110,224	150,919	204,969	241,888	121,206	139,946	368,981	449,107
March	124,980	216,360	218,219	257,519	159,998	174,104	438,058	
April	117,921	228,149	267,313	259,689	161,952	223,587	384,924	
May	135,306	178,589	307,656	242,353	139,107	263,113	540,549	
June	120,601	174,247	273,188	243,108	144,539	356,431	526,772	
July	127,578	162,855	272,778	237,159	114,790	380,336	503,685	
August	131,391	177,902	282,645	209,856	86,599	405,952	597,750	
September	119,155	181,150	248,613	213,057	96,476	382,118	643,767	
October	129,828	186,457	251,411	220,550	147,293	349,848	610,125	
November	155,138	187,554	233,342	175,961	140,731	362,766	554,839	
December	150,102	190,854	235,959	181,715	117,827	353,856	580,961	
Totals	1,540,895	2,187,724	2,947,596	2,745,635	1,549,554	3,532,606	6,110,790	1,057,393

Iron Ore Imports.

	1914.	1915.	1916.	1917.
Jan. .	191,804	75,286	89,844	97,440
Feb. .	112,574	78,773	93,315	86,314
Mar. .	68,549	88,402	93,383	
April .	111,812	91,561	75,712	
May .	125,639	98,974	148,599	
June .	188,647	118,575	134,154	
July .	141,838	119,468	156,755	
Aug. .	134,913	126,806	127,094	
Sept. .	109,176	173,253	100,747	
Oct. .	114,341	138,318	95,833	
Nov. .	90,222	113,544	82,257	
Dec. .	51,053	118,321	118,043	
Totals	1,350,588	1,341,281	1,325,736	183,554

Iron and Steel Imports.

	1913.	1914.	1915.	1916.	1917.
Jan. .	21,740	17,776	10,568	13,824	39,991
Feb. .	25,505	14,757	7,506	20,279	24,380
Mar. .	27,467	27,829	8,025	15,162	
April .	25,742	30,585	16,565	20,175	
May .	28,728	28,173	28,916	32,113	
June .	36,597	23,076	32,200	26,886	
July .	36,694	25,282	20,858	14,774	
Aug. .	18,740	28,768	27,557	32,257	
Sept. .	19,941	38,420	23,344	25,558	
Oct. .	20,840	22,754	34,319	30,170	
Nov. .	25,809	24,165	36,931	42,544	
Dec. .	26,454	9,493	35,409	44,133	
Totals	317,260	289,778	282,443	275,743	64,371

Immigration Statistics.

Years mentioned refer to fiscal years ended June 30th. Aliens admitted include immigrant and non-immigrant, aliens departed include emigrant and non-emigrant.

Excess Arrivals Over Departures.

	Aliens.	Citizens.	Total.
1913	815,303	*61,098	754,205
1914	769,276	*82,211	687,065
1915	50,070	67,167	117,237
1916	125,941	11,197	137,138

July, 1915 ...	11,082	3,912	14,994
August	*14,324	*804	*15,128
September ..	*1,965	866	*1,099
October	4,877	662	5,539
November ...	3,292	*802	2,490
December ...	*570	*891	*1,461
January, 1916	7,303	*1,212	6,091
February	19,420	*1,826	17,594
March	23,791	4,198	27,989
April	26,143	4,471	30,614
May	24,708	2,021	26,729
June	22,184	65	22,249

July	18,244	3,634	21,878
August	21,413	304	21,717
September ..	29,310	1,443	30,753
October	28,339	*2,012	26,327
November ..	24,241	*183	24,058
December ...	18,791	*252	18,539
Six months ...	140,338	2,934	143,272
January, 1917	19,563	*1,790	17,773
February	14,145	*1,612	12,533
March	14,125	2,591	16,716
Nine months ...	188,771	2,093	190,864

March, 1917.

Immigrant aliens in	15,512
Non-immigrants in	4,618
Total aliens in	20,130

Emigrant aliens out	2,318
Non-emigrant aliens out	3,687
Total aliens out	6,005

Citizens in	14,192
Citizens out	8,871
Excess citizens in	2,591

Change in population:

Aliens	+ 14,125
Citizens	-- 2,591
Net change	+ 16,716

* Excess of departures.

Our Foreign Trade.

Value of merchandise imports and exports and favorable trade balance, calendar years.

	Imports.	Exports.	Balance.
1905	1,179,144,550	1,626,990,795	447,846,245
1906	1,320,501,572	1,798,243,434	477,741,862
1907	1,423,169,820	1,923,426,205	500,256,385
1908	1,116,374,087	1,752,835,447	636,461,360
1909	1,475,520,724	1,728,198,645	252,677,921
1910	1,562,904,151	1,866,258,904	303,354,753
1911	1,532,359,160	2,092,526,746	560,167,586
1912	1,618,133,355	2,399,217,993	581,084,638
1913	1,792,596,480	2,484,018,292	691,421,812
1914	1,789,276,001	2,113,624,050	324,348,049
1915	1,778,596,695	3,554,670,847	1,776,074,152
1916	*2,391,654,335	*5,481,423,589	*3,089,769,254

1914—

May	164,281,515	161,732,619	†2,548,896
June	157,529,450	157,072,044	†457,406
July	150,677,291	154,138,947	†5,538,344
Aug.	129,767,890	110,367,494	†19,400,396
Sept.	139,710,611	156,052,333	16,341,722
Oct.	137,978,778	195,283,852	57,305,074
Nov.	126,467,062	205,878,333	79,411,271
Dec.	114,656,545	245,632,558	130,976,013

1915—

Jan.	122,148,317	267,879,313	145,730,996
Feb.	125,123,391	298,727,757	173,604,366
Mar.	158,022,016	296,501,852	138,479,836
Apr.	160,576,106	294,745,913	134,169,807
May	142,284,851	273,769,093	131,484,242
June	157,695,140	268,547,416	110,852,276
July	143,099,620	267,978,990	124,879,370
Aug.	141,830,202	261,025,230	119,195,028
Sept.	151,236,026	300,676,822	149,440,796
Oct.	149,172,729	336,452,009	186,979,289
Nov.	155,496,675	327,670,353	172,173,678
Dec.	171,832,505	359,306,492	187,473,987

1916—

Jan.	184,350,942	330,036,410	145,685,468
Feb.	193,935,117	402,991,118	209,056,001
Mar.	213,589,785	409,850,425	196,260,640
Apr.	217,705,397	399,861,157	182,155,760
May	229,186,957	474,981,255	245,694,298
June	245,795,438	464,784,318	218,988,880
July	182,722,938	445,472,000	262,749,062
Aug.	199,247,391	509,778,680	310,531,289
Sept.	164,038,614	515,007,408	350,968,794
Oct.	178,658,730	492,813,918	314,155,188
Nov.	176,988,305	516,976,359	339,988,054
Dec.	204,834,188	521,650,904	316,816,716

1917—

Jan.	241,707,282	*613,555,693	*371,848,411
Feb.	199,479,996	467,683,406	268,203,410
Mar.	*270,184,139	551,278,338	280,793,889

* High record. † Balance unfavorable.

Copper in April.

April a Month of Uncertainty, Weakness and Dissatisfaction—Rumors of Additional Government Orders at Full Market Prices—March Exports Largest in History—Net Decline 4c per lb. on all Positions.

Weakness and dissatisfaction were prominent features in the copper industry during April. Uncertainty as to future business and prices, was the real basis of the difficulties that resulted in unsettling the market and giving rise to various unreliable rumors from time to time, that were not conducive to healthful conditions in the trade. At one time, it was asserted that production was largely in excess of consumption, but this was immediately offset by the statement that output had been greatly curtailed because of labor difficulties, transportation hold-ups, and various other interferences. The reserved attitude of the Entente Governments, from whom expected orders for last half 1917 did not come, was explained by their overbought condition and the gratifying results from their economic campaign in making large recoveries from scrap. Re-offerings by domestic consumers of reserved stocks, were a disturbing feature that accelerated the downward tendency of prices, after which appeared rumors as to the probable needs of the United States Government for larger quantities of metal for 1917, with the assertion made that higher prices than had been agreed upon for the tonnage placed in March, were to be received. It was pointed out that the largest interests had their capacity oversold for first half 1917, and that no surplus stocks were being carried by them, also, that they were behind on contract deliveries to the Allies but with the permission of the purchasers who were well supplied.

Record Exports in March

The significant feature in the closing week, was revealed by the Custom House report, showing March exports to have been the largest in the history of the industry, 47,963 tons, making exports for the first quarter 106,129 tons, equivalent to 237,728,960 pounds. These figures indicate an excess of nearly 4,500,000 pounds a month over contract

obligations to the Allies—France receiving the heaviest tonnage. Notwithstanding the loss of 30,000 tons by submarine warfare, it is pointed out that the Allies have on hand sufficient copper to cover needs for the next two or three months, indicating that new orders are not likely to be placed before the end of May or possibly June.

The net decline for the month was 4c per pound in all positions—from 34.50c to 35.00c to 30.50c to 31.00c for spot prime Lake, from 34.00c to 34.50c to 30.00c to 31.00c for spot Electrolytic, and from 30.75c to 31.25c to 27.25c to 27.75c for spot Casting. Third quarter Electrolytic declined from 30.30c to 25.00c to 26.00c and fourth quarter from 29.00c to 30.00c to 24.00c to 25.00c per pound.

Net Decline in London £9.

The foreign market remained stationary during the first fortnight, but suffered a net decline of £9 from £151 to £142 for American Electrolytic and from £147 to £138 for Standard copper by the closing day of the month.

Prices at the beginning of the month, were at the same figures as the March closing, but with almost no interest being shown by consumers and but little trading, a decline of 1½c was registered by the end of the first week. The reduction of prices to the United States Government was admittedly the cause of the uncertainty that reigned in the trade, and that had developed a waiting attitude, producing irregularity in the market during the transitory stage, pending the settlement as to what effect the entrance of the United States into the war, would have upon the price of copper sold to the Allies. By the close of the first fortnight a decline of 2c was registered and talk of an excess of production over consumption was heard on all sides.

Market Dull—A Slight Recovery at the Close.

During the third week, business was

Lake Copper Prices.

Monthly average prices of Lake Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.89	14.76	13.89	24.10	29.83
Feb.	15.37	14.98	14.72½	27.44	34.04½
Mar.	14.96	14.79	15.11	27.42	35.33
Apr.	15.55	14.68	17.44	28.90½	32.46
May	15.73	14.44	18.81	29.28½	
June	15.08	14.15	19.92	27.44	
July	14.77	13.73	19.42	25.81	
Aug.	15.79	12.68	17.47	26.58	
Sept.	16.72	12.43½	17.76	27.86	
Oct.	16.81	11.66	17.92½	28.37½	
Nov.	15.90	11.93	18.86	31.71	
Dec.	14.82	13.16	20.37½	33.07½	
Av.	15.70	13.61	17.64	28.17	

Electrolytic Copper Prices.

Monthly average prices of Electrolytic Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.73½	14.45	13.71	24.10	30.26
Feb.	15.27	14.67	14.57	27.46	35.22
Mar.	14.92½	14.33½	1.96	27.44	35.74
Apr.	15.48	14.34	17.09	29.31	32.19
May	15.63	14.13	18.60	29.81	
June	14.85	13.81	19.71	27.49½	
July	14.57	13.49	19.08	25.60	
Aug.	15.68	12.41½	17.22	27.36½	
Sept.	16.55	12.03½	17.70½	28.26	
Oct.	16.54	11.40	17.86	28.64	
Nov.	15.47	11.74	18.83	32.22½	
Dec.	14.47	12.93	20.35	33.84	
Av.	15.52	13.31½	17.47	28.46	

Casting Copper Prices.

Monthly average prices of Casting Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.57	14.27	13.52	25.06	28.04½
Feb.	15.14	14.48	14.17	26.03	31.73½
Mar.	14.76	14.18	14.34	25.90	32.18
Apr.	15.79	14.18	16.48	27.16	29.24
May	15.45½	14.00	17.41	27.37	
June	14.72	13.65	18.74½	25.10	
July	14.40½	13.34½	17.76½	23.61	
Aug.	15.50	12.27	16.46	24.67	
Sept.	16.37½	12.00	16.75	25.93	
Oct.	16.33	11.29	17.32	27.17	
Nov.	15.19	11.63	18.41	30.37½	
Dec.	14.22	12.83½	19.73	31.74	
Av.	15.33	13.19	16.76	26.51	

Sheet Copper Price Changes.

The changes in the base price of sheet copper since Feb. 15, 1916 are given below, with price of Lake copper on the same date.

1916—	Sheet Copper.	Lake Copper.
February 29	34.00	28.37½
March 10	33.00	27.25
March 16	33.50	27.62½
April 3	34.50	27.62½
April 13	35.50	29.25
April 26	36.50	29.75
May 9	37.50	30.00
August 1	35.50	25.50
August 19	36.00	27.00
September 27	37.00	28.25
November 14	40.00	31.75
November 20	41.00	33.75
December 5	42.00	34.00
1917—		
February 19	44.00	35.25
April 10	42.00	34.25
April 23	40.00	30.75

Waterbury Copper Averages.

	1913.	1914.	1915.	1916.	1917.
Jan.	17.00	14.75	14.12½	24.75	32.25
Feb.	15.50	15.12½	15.25	27.75	35.25
Mar.	15.12½	15.00	15.75	28.00	35.50
Apr.	15.75	14.87½	18.50	29.00	32.75
May	15.87½	14.75	22.50	29.87½	
June	15.37½	14.37½	22.50	28.25	
July	14.75	14.12½	22.25	27.25	
Aug.	15.62½	13.00	19.50	27.00	
Sept.	16.87½	12.87½	18.50	28.00	
Oct.	16.87½	12.25	18.25	28.87½	
Nov.	16.25	12.25	19.37½	33.25	
Dec.	15.00	13.50	20.75	34.25	
Av.	15.83	13.91	18.94	28.85½	

Exports of Copper From the United States.

(In tons of 2,240 lbs.)

	1914.	1915.	1916.	1917.
January ..	36,018	26,193	23,663	26,958
February ..	34,634	15,583	20,648	30,392
March	46,504	30,148	26,321	47,400
April	35,079	18,738	21,654	
May	32,077	28,889	16,062	
June	35,182	16,976	39,595	
July	34,145	17,708	35,066	
August ..	16,509	17,551	32,190	
September	19,402	14,877	29,803	
October ..	23,514	24,087	33,224	
November	24,999	23,168	22,598	
December.	22,166	42,426	26,486	
Totals ..	360,229	276,344	327,310	

practically at a standstill and a gloomy atmosphere pervaded the trade, uncertainty still clouding the viewpoint, and producing hesitancy, that resulted in further concessions which carried spot prices to the minimum for the month; 30.50c for prime Lake, 30.00c for Electrolytic and 27.25c for Casting copper; with third quarter Electrolytic 25c and fourth quarter 24.00c. At about this time, persistent rumors began to circulate to the effect that not only were the Allied Governments actually negotiating for large tonnages, for last half 1917, but that the United States Government also would need further large supplies for this year and that the price to be paid for this copper would be at an appreciable advance over the March tonnage concession. None of these sensational reports—believed to have had their origin in Wall Street—were verified by facts, but the fall in prices of copper securities was arrested, and a slight recovery in prices of copper was made during the closing days of the month, when a somewhat stronger tone was manifested in an advance to 26.00c per pound for third quarter; nearby to 31.00c and May to 30.00c with June held at 29.00c per pound.

First quarter production is estimated to have averaged 95,000 tons monthly, equivalent to 638,400,000 pounds for the three months. Deducting total exports of 237,729,000 pounds leaves 400,671,000 pounds which were available for domestic consumption, or at an average monthly rate of 133,557,000

pounds. April production is estimated to have been approximately 100,000 tons, equivalent to 224,000,000 pounds, indicating an even larger monthly supply than was though possible during first quarter. Estimating April exports at 42,000 tons, or 94,080,000 pounds, would leave 130,000,000 pounds available for domestic consumption.

Copper Prices in April

Day.	— New York —			London.	
	Lake. Cents.	Electro. Cents.	Casting. Cents.	Standard.	£ s d
2	34.75	34.25	31.00	136	0 0
3	34.25	34.00	31.00	136	0 0
4	34.25	34.00	31.00	136	0 0
5	34.25	34.00	31.00	136	0 0
9	33.75	33.50	30.87 ¹ / ₂	136	0 0
10	33.75	33.50	30.87 ¹ / ₂	136	0 0
11	33.25	33.25	30.50	136	0 0
12	33.25	32.75	30.25	136	0 0
13	33.25	32.75	29.87 ¹ / ₂	136	0 0
16	32.75	32.25	29.62 ¹ / ₂	136	0 0
17	32.25	31.75	29.25	135	0 0
18	31.75	31.50	29.00	135	0 0
19	31.75	31.50	28.75	133	0 0
20	31.50	31.00	28.25	133	0 0
23	30.75	30.50	27.50	133	0 0
24	30.75	30.50	27.00	130	0 0
25	30.75	30.50	27.00	130	0 0
26	30.75	30.50	27.00	130	0 0
27	30.75	30.50	27.00	130	0 0
30	30.75	31.25	28.00	130	0 0
High	35.00	34.50	31.25	136	0 0
Low	30.50	30.00	26.75	130	0 0
Av'ge	32.46	32.19	29.34	133	16 0

Tin in April.

April a Month Replete With Many Interesting Developments—Market Strong and Active—Net Advance Here 4³/₈c Per Pound—London Up £15.

The month of April in the tin industry was unusually interesting because of the many new developments that attracted attention. Of first importance, was the fresh impetus given to the smelting of tin in this country by the completion of the plans of the Williams Harvey Corporation, who began the construction of a plant on land in Jamaica Bay, which will have an annual productive capacity of 20,000 tons when in full operation. The company will smelt Bolivian ores brought from South America. The Bethlehem Steel Company expects to double its capacity for the manufacture of tin plate from its present production of 1,000,000 base boxes, with the completion of its Sparrows Point plant.

Steamers bringing tin by way of the Panama Canal route attracted attention—the Dutch Steamship Line having adopted this round about way to its home port, in Holland, because less hazardous, for the remainder of the war period, in preference to the former route by way of Suez Canal. Overland tin from Pacific ports excited lively interest when it was realized how advantageous this method was in facilitating deliveries of tin to interior points along its way to Atlantic ports.

Food Problem.

The magnitude of the food problem facing the Government of the United States, brought out the importance of conserving the tin plate supply for the use of canners, when the United States called attention to this fact, in an appeal to make every effort possible, to aid in this direction by increasing and extending tin plate mill operations to the utmost, in order to meet the greatest demand for food that has ever been experienced in history.

Permit Troubles.

The British permit system continued to plague domestic consumers of tin, who were obliged to obtain necessary spot tin for contracts, by paying a premium of 4c to 5c per pound for such needs. Why consumers orders, that

were previously placed, should be refused permits, while importers were able to obtain them remained a mystery that it was hoped would be quickly solved, now that the United States is a fully recognized Ally of the Entente Governments.

Rumors of Import Tax.

The proposed Government import tax of 10c per pound, created a stir in tin circles, and immediately caused a reserved attitude to be manifested by sellers but after a few days agitation and investigation, it became evident that this measure of very doubtful value, was not at all likely to be imposed, and the trade became satisfied that it would not go through at this time.

The market was steady and strong throughout the month with more than sufficient arrivals of metal to meet requirements—Atlantic ports alone, registering 3,800 tons. A continuously upward tendency, after the fractional decline from the March closing figures, which ushered in the month, prevailed, registering an advance of 4.37¹/₂c over the opening price. Sales were made as high as 58.75c with 59.25c asked. Foreign cables had small influence upon the spot market here, which before the war, was very sensitive to any change abroad. Foreign fluctuations followed a wide range from £214 2s 6d for spot Straits in the first week to £229 12s 6d on the last day. Spot and future Standard closed at £229 10s and £230 5s respectively. Straits at Singapore, c.i.f. London was £231.

At the beginning of April, March deliveries into American ports were reported to have been 4,804 tons, of which 1,404 tons arrived at Pacific ports. Prices were off 1sc but this recession was quickly recovered, and by the end of the first week an advance of 25c carried prices to 55.25c asked, with 54.75c paid.

Publication of Names of Tin Boats Discontinued.

In the second week, a better demand

for both spot and future delivery was noted and the sustained strength of the foreign market attracted attention. On the 11th, the United States Government requested that names of tin-laden vessels hereafter be withheld. Banca tin sold at 54c on steamers at dock. By the close of the week, 99% pure tin was in fair demand at 50.50c for lots arriving late April and early May. A good business was reported in April shipment of No. 1 Chinese 99% at 46.50c to 47.00c, this being 6c per pound under Straits tin.

National Lead Company Enters Tin Smelting Field.

At the beginning of the second fortnight, large arrivals at Pacific ports attracted attention to the advantage of shipping overland direct to interior points and the smelting of tin by the National Lead Company, who purchased one-half of the capital stock of the Williams Harvey & Co., Ltd.—the largest smelters of tin in Europe—aroused much interest in the trade. Large buyers, a short time after, contracted for pig tin for September-October arrivals at 51c per pound and spot Straits on the 17th was off $\frac{1}{4}$ c below previous price. Following this, advices received from London, indicated that the British Government had at last realized the injustice inflicted through manipulation of the permit system and gave assurances that this difficulty would be remedied forthwith. The foreign market was now rising with a steady volume of increasing business and spot tin here had advanced $\frac{5}{8}$ c during the week when on the 23rd, a leap of 2c per pound occurred, due to the sharp advance in war risk insurance and in cost. Small business resulted, and the price was 57.50c. Following this rise, Banca, No. 1 Chinese and Aus-

tralian tin were in good demand for various future deliveries. Later, some adverse comment was heard because the 99% tin smelted in this country is placed upon the market without any distinguishing mark to indicate its grade. The pure electrolytically refined tin, smelted in this country, is always most carefully branded. In the closing days, the spot market gradually increased in strength until on the 27th, 58.75c was registered, this being the highest price for the month. On the last day, some irregularity in prices was noted, and spot prices were shaded in some instances to 58.50c although official quotations remained the same as before.

Tin Prices in April.

Day.	New York.	London.		
	Cents.	£	s	d
2	54.50	215	10	0
3	54.37 $\frac{1}{2}$	214	0	0
4	54.75	216	0	0
5	54.75	216	0	0
9	54.60			
10	54.70	216	5	0
11	54.85	216	10	0
12	54.87 $\frac{1}{2}$	216	15	0
13	55.00	217	0	0
16	55.25	217	15	0
17	55.37 $\frac{1}{2}$	217	15	0
18	55.25	218	0	0
19	55.62 $\frac{1}{2}$	219	5	0
20	55.75	219	15	0
23	57.50	224	15	0
24	57.50	224	10	0
25	58.00	225	15	0
26	58.25	227	15	0
27	58.75	230	10	0
30		229	10	0
High	58.75	230	10	0
Low	54.37	214	0	0
Average	55.00	230	5	5

Visible Supplies.

Visible supply of tin at end of each month:

	1913.	1914.	1915.	1916.	1917.
Jan.	13,971	16,244	13,901	17,041	18,169
Feb.	12,304	17,308	14,548	16,511	19,627
Mar.	11,132	16,989	15,467	18,782	20,307
April	9,822	15,447	15,785	19,739	
May	13,710	17,862	14,646	19,614	
June	11,101	16,027	15,927	19,363	
July	12,063	14,167	16,084	18,404	
Aug.	11,261	14,452	15,127	18,042	
Sept.	12,943	14,613	15,191	16,192	
Oct.	11,857	10,894	13,154	17,415	
Nov.	14,470	11,483	16,451	21,186	
Dec.	13,893	13,396	16,216	20,737	
Av'ge	12,377	14,907	15,208	18,585	

Shipments From the Straits.

Monthly shipments of tin from the Straits Settlements to Europe and United States:

	1913.	1914.	1915.	1916.	1917.
Jan.	6,050	5,290	5,200	6,095	4,815
Feb.	4,660	6,520	5,584	6,250	6,255
Mar.	4,810	4,120	4,970	5,170	5,134
April	4,400	4,930	5,270	4,685	
May	6,160	6,900	6,759	3,965	
June	4,280	5,870	6,665	6,210	
July	4,770	4,975	5,606	5,410	
Aug.	6,030	3,315	4,712	4,526	
Sept.	5,160	4,973	5,296	3,270	
Oct.	5,020	4,610	4,441	5,868	
Nov.	5,560	5,155	6,713	5,380	
Dec.	5,110	6,435	5,301	4,758	
Total	62,550	63,093	66,517	61,587	
Av'ge.	5,213	5,258	5,543	5,132	

Consumption In the U. S.

Monthly deliveries of tin in the United States exclusive of Pacific Coast:

	1913.	1914.	1915.	1916.*	1917.*
Jan.	3,700	3,600	2,300	4,452	7,177
Feb.	3,500	3,300	3,375	6,388	3,930
Mar.	5,900	4,450	3,200	4,726	4,804
April	3,450	4,300	3,200	4,202	
May	3,350	3,800	5,600	5,455	
June	3,800	3,650	3,900	6,398	
July	3,900	3,900	5,300	4,432	
Aug.	3,600	2,900	4,500	4,335	
Sept.	3,100	3,600	4,300	4,025	
Oct.	3,700	3,700	4,900	4,556	
Nov.	2,800	2,600	2,975	3,165	
Dec.	3,100	1,900	5,200	4,082	
Total	43,900	41,700	48,750	56,216	
Av'ge.	3,658	3,475	4,062	4,685	

* Includes deliveries at Pacific coast.

Straits Tin Prices In New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	50.45	37.74	34.30	41.88	44.19
Feb.	48.73	39.93	37.30	42.63	51.37
Mar.	46.88	38.08	49.93½	50.42	54.36
Apr.	49.12	36.10	47.98	51.75	55.91
May	49.14	33.30	38.78	49.15	
June	44.93	30.65	40.37	42.18	
July	40.39	31.75	37.50	38.46	
Aug.	41.72	50.59½	43.39	38.54	
Sept.	42.47	32.79	33.13	38.70½	
Oct.	40.50	30.39½	33.08	41.16	
Nov.	39.81	33.50	39.37½	44.17	
Dec.	37.64	33.60	38.75	42.66½	
Year	44.32	35.70	38.66	43.48	

—1916—		—1917—	
High.	Low.	High.	Low.
Jan. .. 45.00	40.87½	45.85	42.50
Feb. .. 50.00	41.25	55.00	48.75
Mar. .. 56.00	46.00	56.62½	51.50
April .. 54.50	49.50	58.75	54.37½
May .. 51.50	45.75		
June .. 45.50	39.00		
July .. 49.37½	37.50		
Aug. .. 49.37½	37.75		
Sept. .. 39.37½	38.50		
Oct. .. 42.75	39.37½		
Nov. .. 45.62½	41.75		
Dec. .. 45.12½	40.50		
Year .. 56.00	41.50		

Tin Imports -- Classified (January 1, to March 31.)

(January 1 to March 31)

(Long tons)	1914.	1915.	1916.	1917.
Straits	9,250	11,750	14,526	11,332
Australian ..	25	.....	.....	60
Banca and ..				
Billiton ..	13	5	650	1,965
English	815	545	1,565	1,830
Chinese	655	65	120	175
Sundries	10	30	70	.....
Total, tons.	11,148	12,394	16,941	15,762

Spelter in April.

**Market Very Quiet, Pending Announcement of Government's Requirements
—Copper Rumors Cause Active and Higher Market Toward the
Close—Net Decline 1c Per Pound—Zinc Ore Off About \$15.**

Hopes in the spelter market, from time to time during the month, that renewed activity would soon develop, were aroused apparently, only to be dispelled until in the last few days of the closing week, when a sudden demand arose—attributed to sympathetic sentiment in connection with the false reports circulating in the copper trade. However this may be, prices recovered some of the decline that had been steadily proceeding previously, and a considerable business was transacted during the three days—26th, 27th, 28th—while buying movement continued. This business was not so great as it might have been, because spelter was not obtainable in large amounts, producers having cut offerings from 250 to 500 tons at the beginning of the movement, to 50 and 100 tons on the last day, when prices had advanced to within 1c less for prompt than at the beginning of the month, April 2nd. At New York, prompt western was 9.55 to 9.67½c; May-June 9.42½c to 9.67½c; third quarter 9.30c to 9.42½c; and fourth quarter 9.05c to 9.30c while at E. St. Louis, prompt was 9.37½c to 9.50c; May-June 9.25c to 9.50c; third quarter 9.12½c to 9.25c and last quarter 8.87½c to 9.25c.

Zinc ore declined during the month from \$75 to \$90 to \$60 to \$70, according to grade and quality.

London Up £8.

At the beginning of April, the foreign market registered an advance of £8 on both prompt and future deliveries. With a view to improving trade relations existing between the United States and Great Britain, negotiations were entered into by representatives of the two nations regarding restrictions in force governing the spelter market.

The general opinion expressed concerning the stagnant condition of the trade, here, was that just so soon as the United States Government needs were known and the price at which the metal was to be furnished had been definitely

determined, that business would revive and normal conditions be again established. It was understood that in fairness to all concerned, that some time would elapse before anything could really be accomplished, as necessary reports from many sources must be considered and that first of all producers and consumers must arrive at basic conclusions governing the trade. It was suggested that a separate statement of conditions be issued to the Government by both parties.

By the close of the first week, producers' prices had receded ½c, and few sales had been made although numerous inquiries had led to the hope that galvanizers were becoming interested to the buying point. Prompt spelter was held at 10.50c, with 10.25c asked for May and 10c for June-July.

Spelter Prices in April.

Day.	New York.	St. Louis.	London.		
	Cents.	Cents.	£	s	d
2	10.61½	10.43½	55	0	0
3	10.61½	10.43½	55	0	0
4	10.52½	10.37½	55	0	0
5	10.42½	10.25	55	0	0
9	10.17½	10.00	55	0	0
10	10.05	9.87½	55	0	0
11	9.92½	9.75	55	0	0
12	9.80	9.62½	55	0	0
13	9.80	9.62½	55	0	0
16	9.75	9.66½	55	0	0
17	9.67½	9.50	55	0	0
18	9.42½	9.25	55	0	0
19	9.30	9.12½	55	0	0
20	9.17½	9.00	54	0	0
23	9.11½	8.93½	54	0	0
24	9.05	8.87½	54	0	0
25	9.05	8.87½	54	0	0
26	9.17½	9.00	54	0	0
27	9.30	9.12½	54	0	0
30			54	0	0
High	10.67	10.50	55	0	0
Low	8.92½	8.75	54	0	0
Average	9.73	9.55	54	12	8

Spelter Prices in St. Louis.

Extreme price fluctuations of Prime Western Spelter, East St. Louis delivery, by months and years.

	1914			1915			1916			1917		
	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.
Jan.	5.25	5.10	5.14	7.62½	5.55	6.33	19.25	17.12½	18.01	10.87½	9.00	9.82
Feb.	5.35	5.20	5.27	10.00	7.65	8.62	21.00	18.50	19.92	10.75	9.37½	10.32
Mar.	5.22½	5.12½	5.15	11.00	8.87½	9.80	20.62½	16.25	17.91½	10.87½	10.37½	10.65
April	5.12½	4.85	5.03	14.00	9.25	11.22	19.25	17.50	18.44	10.50	8.75	9.55
May	5.00	4.90	4.96	21.00	13.00	15.52½	17.75	13.12½	15.75½			
June	4.97½	4.82½	4.93	27.00	17.50	22.14	13.87½	10.87½	12.62			
July	4.95	4.80	4.84	22.75	17.75	20.53	9.75	8.20	8.92			
Aug.	6.00	4.70	5.45	18.00	10.75	14.19	11.00	8.62½	9.52½			
Sept.	5.85	4.95	5.33	15.25	13.37½	14.10½	9.62½	8.50	9.06			
Oct.	5.00	4.60	4.81	14.62½	13.25	13.89	10.37½	9.25	9.83			
Nov.	5.20	4.80	4.97	19.00	14.37½	16.87½	13.12½	10.25	11.75			
Dec.	5.65	5.20	5.49	18.00	14.75	16.72	13.12½	9.62½	11.11			
Year	6.00	4.60	5.11½	27.00	5.55	14.16	21.00	8.20	13.57	10.75	*9.37½	*10.08½

* Four months.

Spelter Prices in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	7.23	5.33	6.52	18.18½	9.97
Feb.	6.49	5.46	8.86½	20.09	10.49
Mar.	6.29	5.35	10.12½	18.10	10.82½
April	5.79	5.22	11.51	18.61½	9.73
May	5.51	5.16	15.82½	15.93	
June	5.23½	5.12	22.62½	12.80	
July	5.41	5.03	20.80	9.70	
Aug.	5.80	5.63	14.45	9.10	
Sept.	5.83	5.52	14.49	9.23½	
Oct.	5.47	4.99½	14.07	10.01	
Nov.	5.34	5.15	17.04	11.92½	
Dec.	5.22	5.67	16.91	11.28½	
Av.	5.80	5.30	14.44	13.75	

Waterbury Spelter Averages.

	1913.	1914.	1915.	1916.	1917.
Jan.	7.56	5.54	6.55	22.25	13.05
Feb.	6.81	5.70	11.85	22.70	13.80
Mar.	6.56	5.59	12.15	23.15	13.45
April	6.08	5.50	13.85	23.20	11.85
May	5.77	5.38	20.55	21.20	
June	5.50	5.37	25.60	17.40	
July	5.61	5.26	24.90	15.20	
Aug.	5.99	5.66	19.30	13.60	
Sept.	6.13	5.91	17.85	13.70	
Oct.	5.74	5.23	16.85	12.95	
Nov.	5.60	5.38	19.36	14.10	
Dec.	5.44	5.90	21.15	13.20	
Av'ge	6.06½	5.53½	17.50	17.72	

Sheet Zinc Price Changes.

The following table gives the changes in the base price of sheet zinc since June 27, 1916, together with the price of spelter ruling on the same day.

	1916—	Sheet Zinc.	Spelter St. Louis.
June 27		18.00	11.37½
July 6		17.00	9.37½
July 11		15.00	8.62½
October 26		16.00	10.12½
November 10		17.00	11.12½
November 17		18.00	12.00
November 20		19.00	12.12½
November 24		20.00	12.87½
November 24		21.00	12.87½
April 25		20.00	8.57½
April 26		19.00	9.00

Exports of Domestic Spelter and Sheets--Short Tons.

	1916		1917	
	Tons.	Value.	Tons.	Value.
Jan.	10,483	\$3,601,970	15,351	\$4,455,110
Feb.	10,328	3,638,003	15,551	3,933,017
Mar.	8,171	2,902,472		
April	9,133	3,461,914		
May	8,583	3,093,620		
June	11,309	4,036,656		
July	12,708	4,230,805		
Aug.	18,661	5,549,581		
Sept.	19,255	5,150,808		
Oct.	19,994	5,758,357		
Nov.	18,991	5,291,493		
Dec.	15,652	4,774,158		
Total	163,268	\$51,489,837		

Market Dull and Weak.

In the second week, the expected resumption of activity dwindled into weakness with receding prices—prompt being sold at 9.75c to 10c E. St. Louis and at 10c to 10.25c New York.

At the beginning of the second fortnight, zinc ores weakened to \$65 to \$80 per ton. The market was lifeless and the downward tendency continued. Some business was taken at an average price covering shipments over the next six months at 9.12½c. E. St. Louis, which is equivalent to 9.37½c for second quarter and 8.87½c for third quarter. Various rumors concerning the United States Government price were heard but nothing definite was established. By the close of the third week, the premiums previously paid on prompt deliveries were disappearing; April spelter, selling at 9c E. St. Louis. The recession for the week was ½c on prompt and ¼c to ¾c on other deliv-

eries. During the first two days of the closing week, conditions were unchanged, but a sale here and there was noted and a steadying of the market was reported. By the 26th activity was evident, and prices of New York, prompt, April-May, advanced from 8.92½c to 9.17½c to 9.05c to 9.30c, with E. St. Louis up from 8.75c to 8.90c to 8.87½c to 9.12½c. In the next few days, Wall Street's glowing reports on copper produced a decided influence in the spelter market and prices rebounded, with a fair volume of business transacted, that would have been larger had producers not curtailed tonnages offered. On the 27th, it was noted that zinc ores were again reduced, \$60 to \$70 being reported, with some operators closing down mines. On the last day the market was quiet. The net decline was 1c for the month, on prompt, with a proportionate fractional decline on all other positions.

Review of Joplin Zinc and Lead Ore Markets For April.

The month just closed marked a recession in the zinc industry of the Joplin district that has hurt as badly as anything that has taken place for a long period of time. Prices for zinc ores declined from \$80 to \$85 to a level of \$65 to \$70 which marks a reduction below the present cost of production in a very large number of the sheet ground mines. Caught between the upper stone of downward sagging prices and the upward trending cost of supplies and labor, the zinc mine operator faces a situation not at all to his liking.

Nor has the buying been as good as is was expected with the advent of the Spring season. Buyers while taking a very considerable tonnage have not taken the full production and the result has been a steadily growing surplus until mines have begun the only correction measure possible, that of closing down regardless of its results upon the organizations which they had built up.

Hitherto when the market declined, a part of the higher cost of production

has been cut down by the lowering of the wage scale but mine operators realize that it will be impossible to cut wages now with the present cost of life's necessities going higher instead of declining. Hence the wage scale has now become a minimum instead of a graduated scale and there is no hope from that source.

The mine operators have just sent a committee to consult with a Government Board upon Raw Materials and they hope to show the necessity of their case being given consideration in the near future. Otherwise this vital department for munition supply will become crippled. W. B. Shackelford, president of the Operators' Association and Temple Chapman was in New York and Washington this week relative to this matter.

The output reached close to 10,000 tons per week during the month of April and sales were between 8,000 and 9,000 tons per week. As a result of this there was a gradual accumulation of

stocks and the month closed with 19,150 tons as against 12,360 tons at the beginning of the month, and compares with 7,000 tons the same week last year.

The same factors so far as production was concerned entered into the lead industry as in the zinc industry but there was a radical difference in the maintenance of price levels. The average prices paid for lead ores was approximately the same for the entire month. The base offers ranged around \$110 and closed firm at the month end.

With the latter end of the month came the decision on the part of many of the sheet ground men to curtail their operations and in many cases the determination reached actual closing down of the entire plant. This is rapidly making itself felt in the reduction in output and a desire on the part of the buyers to prevent any greater trend in this direction for the closing of the sheet ground directly cuts off the largest tonnage of high grade ores anywhere and the loss would be serious to the brass

special and the sheet zinc producers. Hence it is believed that the bottom has been reached and this was noticeable the last week of the month when the prices stiffened at the close. The month of May is expected to see a revival of prices nearer a normal relation between the cost of production and the profit sheet.

It is growing more difficult to supply mine labor. There are many mines short handed now and with the coming of the harvest season there is always an exodus to the farms for a few months. This will doubtless be more seriously felt this year than usual as the shortage of good mine labor is already becoming acute. With a draft made upon the community for soldiers and other government work this may become another factor to be reckoned with in a reduced output. The balancing feature lies in the fact that there is an increasing number of very rich zinc mines being newly opened in the Oklahoma and Kansas field. This may offset any lack of labor.

Lead in April.

Government Needs the Main Topic of Interest—Month Opened Quiet but Closes Active and Strong—Net Advance $\frac{5}{8}$ c Per Pound.

The greatest points of interest in the lead industry for April, concerned the United States Government's need of the metal and the price which would be paid for it. That the proportion of lead required in war time needs, will necessarily exceed the amount of other metals required, was the general opinion of the trade. While no official announcement of purchase had been made at the close of the month, by the Government, it was understood that producers had been informed in regard to the amount of probable requirements for 1917, and that energetic arrangements were being put into operation to meet the demand. It was pointed out that the main feature of the lead situation was its intrinsic strength, and that this applies to the world position at large, it being really relatively stronger than copper. The United States leads the world in production with Spain second — where labor

troubles and internal conditions often interfere with output. Australia is next in production, but lack of shipping facilities from there, handicaps the industry. The indication is that the United States will be most largely depended upon for the lead needs of the warring nations.

The net advance in prices for the month, was $\frac{5}{8}$ c on spot, from 9.37 $\frac{1}{2}$ c to 9.67 $\frac{1}{2}$ c at the beginning, to 10c at New York on the last day, and from 9.12 $\frac{1}{2}$ c to 9.37 $\frac{1}{2}$ c to 9.75 at St. Louis.

The month opened with a fractional decline of $\frac{1}{8}$ c and by the close of the first week the premiums previously asked for early deliveries were reduced, the market being very quiet. In the second week, speculation as to the price and the quantity of lead that would be required by the United States Government was rife and it was understood that there were so many different considerations that the problem of adjust-

ment would be difficult and require time in its settlement. By the 12th, the recession of the first week was recovered, and the first fortnight closed on a strong, firm market with prices of ore unchanged at \$115 per ton.

In the third week ore prices declined \$5 to \$110 per ton, but in the metal market, with supplies growing scarcer and with an active demand, prices were well sustained in a gradually strengthening market which by the middle of the last week, when probable Government needs for 1917 were made known to producers, had advanced $\frac{3}{8}$ c on spot and early delivery at New York to 9.75c to 10c; at St. Louis to 9.50c to 9.75c. While the demand was not so heavy, the scarcity of metal continued to increase the strength of the market and added firmness to the tone. The leading producer made no change in price for the month, of 9.60c, New York and 8.87 $\frac{1}{2}$ c St. Louis.

By the closing day, an acute shortage of metal was indicated and prices were advanced at New York to 10c for spot-May, and to 9.62 $\frac{1}{2}$ c to 9.87 $\frac{1}{2}$ c for June, with prices at St. Louis, 9.75c for spot-May and 9.62 $\frac{1}{2}$ c for June.

Lead Prices in April.

Day.	New York*	St. Louis.	London.
	Cents.	Cents.	£ s d
2	9.50	9.25	30 10 0
3	9.50	9.12 $\frac{1}{2}$	30 10 0
4	9.50	9.12 $\frac{1}{2}$	30 10 0
5	9.37 $\frac{1}{2}$	9.06 $\frac{1}{4}$	30 10 0
9	9.25	9.06 $\frac{1}{4}$	30 10 0
10	9.25	9.06 $\frac{1}{4}$	30 10 0
11	9.25	9.06 $\frac{1}{4}$	30 10 0
12	9.37 $\frac{1}{2}$	9.06 $\frac{1}{4}$	30 10 0
13	9.37 $\frac{1}{2}$	9.12 $\frac{1}{2}$	30 10 0
16	9.37 $\frac{1}{2}$	9.18 $\frac{3}{4}$	30 10 0
17	9.50	9.18 $\frac{3}{4}$	30 10 0
18	9.50	9.18 $\frac{3}{4}$	30 10 0
19	9.50	9.18 $\frac{3}{4}$	30 10 0
20	9.62 $\frac{1}{2}$	9.25	30 10 0
23	9.62 $\frac{1}{2}$	9.25	30 10 0
24	9.75	9.37 $\frac{1}{2}$	30 10 0
25	9.75	9.62 $\frac{1}{2}$	30 10 0
26	9.75	9.62 $\frac{1}{2}$	30 10 0
27	9.87 $\frac{1}{2}$	9.62 $\frac{1}{2}$	30 10 0
High	10.00	9.75	30 10 0
Low	9.12 $\frac{1}{2}$	9.00	30 10 0
Average	9.53	9.26	30 10 0

* Outside market.

Antimony in April.

Market Firm the Fore Part of Month With Spot Metal Scarce, but Later Turned Weak—Net Decline 3 $\frac{1}{2}$ c to 4c per Pound

The strength of future deliveries was prominent in the antimony market during the latter half of April, when prices registered an advance of $\frac{3}{8}$ c to $\frac{7}{8}$ c on the various positions. The spot price—due to large arrivals which relieved the acute scarcity after the middle of the month—recorded a gradual recession of 3.50c to 4.00c from 36.00c to 32.00c to 32.50c on the last day.

The foreign market remained unchanged throughout the month, at \$85 for fairly large amounts of antimony but business was hampered by freight difficulties and spot metal continued scarce. An interesting note, attributed to the head of a French mining society, announced that the famous mines at Lucette, France, are nearing exhaustion, the workings now being in the

slate strata. Formerly, these mines had an annual production of 2,000 to 3,000 tons of antimony regulus, and the cutting off of this supply will increase the demand upon the Orient.

Because of the continued scarcity of the metal, prices of spot antimony remained firm at 36c, duty paid, during the first 12 days of the month, but with only light demand, and supplies beginning to arrive overland from the Pacific as well as by way of Panama, a gradual decline set in with freer offerings, which by the end of the first fortnight, carried prices downward to 35c for spot metal. Future deliveries at the beginning of the month at New York, were 32c for April, 25c to 26c, duty paid, for May arrivals, 16c to 16.50c in bond, for March shipment from the

Orient, and 14.50c to 14.75c for April shipment. By the 12th day, May delivery was 26c to 27c, duty paid, and sellers were asking 17c, c.i.f. New York in bond for March shipments from the Orient, with April still 14.75c.

During the third week, freer offerings brought about further recessions in spot prices to 34c; May 25c to 26c and June 19c to 20c, New York. About this time there were rumors that munitions makers would soon be in the market, and spot prices remained steady until the 25th, when another 1c decline was

registered to 33c. Future deliveries, however, were firm at this time, and 38c to 78c higher on the various positions. On the closing day, the interest in future deliveries was still active and prices firm, but the spot market, because of continued arrivals by rail from the Pacific Coast, weakened another 1c to 32c to 32.50c. The expected munitions orders from Canadian manufacturers and from the United States had not yet been placed on the last day of the month.

Aluminum in April.

Market Steady but Dull Throughout April—1916 Consumption 21% Greater Than in 1915—Scrap Metal Active.

The generally increasing use of aluminum was the feature of note in the April market; this fact being recognized and commented upon not only in the various journals and trade papers at home but in Great Britain and in France, as well. The opinion was expressed, that because of its adaptability for so many requirements, a great future is in store for the metal when the war is over. It is mentioned as a probable competitor of not only copper but of tin plate, and in London, it was reported that the motor car industry seriously considered using it for the manufacture of their engines, because of its lightness, the saving in running costs and its quick radiation of heat.

The United States Geological Survey reported an increased consumption of 21% during 1916, over the 1915 figures

—the 1916 estimate being 121,000,000 pounds.

The market in April was steady, although not very active, and in the last week, dullness reigned in spot trading. Prices for No. 1 Virgin, were unchanged throughout the month at 59c to 61c, but an advance of one cent per pound on pure 98-99% remelted, from 55c to 57c to 56c to 58c and on No. 12 alloy remelted, from 39c to 41c to 40c to 42c was registered on the 12th, after which date, they remained for the balance of the month at the higher figures. Scrap aluminum was in very active demand until toward the end of the month when it became easier at 42c to 43c for sheet scrap. An export demand came from Japan on the 25th, for 99% virgin, a quality that is always very scarce.

Lead Prices in St. Louis.

Extreme fluctuations of Soft Missouri Lead in St. Louis.

—1914—			—1915—			—1916—			—1917—		
High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.
Jan. 4.10	3.95	3.99½	3.65	3.50	3.57	6.00	5.45	5.80	8.25	7.30	7.58
Feb. 4.10	3.85	3.95	3.80	3.62½	3.72	6.37½	6.00	6.17	10.00	8.00	9.04
Mar. 3.87½	3.65	3.83½	4.12½	3.82½	3.98	8.25	6.40	7.46	10.00	9.25	9.53
April 3.80	3.65	3.70	4.15	4.07½	4.11	8.12½	7.32½	7.67	9.75	9.00	9.26
May 3.82½	3.77½	3.81	4.45	4.10	4.16	7.45	7.10	7.28			
June 3.82½	3.77½	3.80	7.50	4.80	5.76	7.20	6.62½	6.77			
July 3.77½	3.72½	3.75	5.67½	5.30	5.52	6.67½	6.00	6.20			
Aug. 3.75	3.70	3.73½	5.20	4.30	4.59	6.75	5.75	6.19			
Sept. 3.75	3.55	3.67	4.82½	4.35	4.53	6.95	6.50	6.71			
Oct. 3.55	3.35	3.39½	4.82½	4.40	4.51½	6.90	6.85	6.87½			
Nov. 3.82½	3.37½	3.58	5.22½	4.82½	5.08	7.25	6.85	6.96			
Dec. 3.70	3.60	3.67	5.42½	5.10	5.26½	8.00	7.20	7.53			
Year 4.10	3.35	3.74	7.50	3.50	4.57	8.25	5.45	6.80	*9.50	*8.39	*8.85

* Four months.

Aluminum, Silver, and Antimony
Prices in April.

— New York —			
Day.	Aluminum. Cents.	Silver. Cents.	Antimony. Cents.
2	60.00	74.12½	36.00
3	60.00	74.12½	36.00
4	60.00	74.00	36.00
5	60.00	73.75	36.00
9	60.00	73.62½	36.00
10	60.00	73.75	35.75
11	60.00	73.75	35.75
12	60.00	73.75	35.25
13	60.00	73.62½	35.25
14		73.62½	.....
16	60.00	73.62½	34.50
17	60.00	73.62½	34.25
18	60.00	74.00	34.00
19	60.00	74.62½	34.00
20	60.00	74.87½	34.00
21		74.75	.....
23	60.00	72.87½	34.00
24	60.00	72.25	34.00
25	60.00	.....	33.50
26	60.00	73.50	33.50
27	60.00	74.12½	33.25
30	60.00	74.75	32.25
High	64.00	74.87½	36.00
Low	59.00	72.87½	32.00
Average	60.00	73.88½	34.66

Aluminum Prices In New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	26.31	18.86	19.01	54.33	60.00
Feb.	26.20	18.80½	19.20	57.50	58.05½
Mar.	26.72	18.30	18.94½	60.52	59.23
April	26.91	18.08	18.83	60.00	60.00
May	25.95	17.93	21.85	60.00	
June	24.79	17.82	29.66	62.09	
July	23.34	17.59	32.50	60.15	
Aug.	22.73	20.38	34.00	59.48	
Sept.	22.00	19.28½	46.75	61.90	
Oct.	20.32	18.25	54.17½	64.55	
Nov.	19.49	18.83	57.85	64.80	
Dec.	18.85	19.02	56.80½	63.40	
Av.	23.63	18.59½	34.13	60.73	

Imports of Aluminum.

(In tons of 2,000 lbs.)

	1913.	1914.	1915.	1916.	1917.
Jan.	1,590	616	636	425	1
Feb.	996	635	291	324	14
Mar.	1,007	741	383	223	
April	1,773	678	153	406	
May	1,169	586	209	696	
June	880	548	893	325	
July	1,216	709	356	208	
Aug.	668	736	245	106	
Sept.	529	636	521	12	
Oct.	560	1,283	93	247	
Nov.	528	406	61	348	
Dec.	677	516	426	4	
Total	11,593	8,000	4,267	3,324	

Lead Prices in New York.

Based on American Smelting & Refining Company's quotations on 50 ton lots.

	1913.	1914.	1915.	1916.	1917.
Jan.	5.35	4.11	3.74	5.94	7.81
Feb.	4.35	4.06	3.82	6.23	8.34
Mar.	4.35	3.97	4.03	6.83	8.98
April	4.40	3.82	4.20	7.50	9.00
May	4.36	3.90	4.23	7.50	
June	4.35	3.90	5.87	7.02	
July	4.37	3.90	5.74	6.54	
Aug.	4.63	3.90	4.75	6.25	
Sept.	4.75	3.86	4.62	6.75	
Oct.	4.45	3.54	4.50	7.00	
Nov.	4.34	3.68	5.15	7.00	
Dec.	4.06	3.80	5.30	7.44	
Av.	4.40	3.87	4.67½	6.83	

Exports of Domestic Lead.

(In tons of 2,000 pounds.)

	1916	1917
Jan.	7,192	\$790,447
Feb.	10,246	1,392,624
Mar.	8,585	1,068,159
April	5,870	857,095
May	7,558	1,027,273
June	7,167	1,062,616
July	9,008	1,276,316
Aug.	7,542	995,724
Sept.	15,633	2,012,413
Oct.	9,396	1,303,934
Nov.	6,402	887,429
Dec.	5,866	866,873
Total	100,465	13,508,293

Aluminum and Silver Prices.

— New York —

Aluminum. — Silver —

	1916.	1917.	1916.	1917.
Jan. ...	54.23	60.00	56.77½	75.63
Feb. ...	57.50	58.05½	56.75½	77.57
Mar. ...	60.25	59.23	57.93½	73.86
April ...	60.00	60.00	64.41½	73.88½
May ...	60.00		74.27	
June ...	62.09		65.02½	
July ...	60.15		62.94	
Aug. ...	59.48		66.08	
Sept. ...	61.90		68.51½	
Oct. ...	64.55		67.85½	
Nov. ...	64.80		71.60	
Dec. ...	63.40		75.76½	
Average	60.75		65.69	

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., required by the act of Congress of August 24, 1912 of the STEEL AND METAL DIGEST, publish monthly at New York, N. Y., for April 1, 1917.

State of New York, County of New York: Before me, a Notary Public in and for the State and County aforesaid, personally appeared A. R. Trench, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the Steel and Metal Digest, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, circulation, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations.

That the names and addresses of the publisher, editor, managing editor, and business managers are:

Name of—	Post Office Address.
Publisher, American Metal	
Market Co.	81 Fulton St., N. Y.
Editor, C. S. Trench ..	81 Fulton St., N. Y.
Managing Editor,	
C. S. J. Trench	81 Fulton St., N. Y.
Business Manager,	
A. R. Trench	81 Fulton St., N. Y.

That the owner's name, and the name and addresses of stockholders owning or holding 1 per cent. or more of the total amount of stock are:

American Metal	
Market Co.	81 Fulton St., N. Y.
C. S. Trench	81 Fulton St., N. Y.
C. S. J. Trench	81 Fulton St., N. Y.
I. Trench	81 Fulton St., N. Y.

That the known bondholders, mortgagees and other security holders owning or holding 1 per cent. or more of total amount of bonds, mortgages, or other securities are: None.

That the two paragraphs next above giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also in cases where the stockholders or security holders appear upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him. (Signed) A. R. Trench, Business Manager. Sworn to and subscribed before me this second day of April, 1917.

John Bowen,
Notary Public, Kings County.
Ctf. filed in New York County.

Trade Notes.

The Mahoning Valley Steel Company, Niles, Ohio, expects to start four hot sheet mills not later than May 1. When the entire plant is completed, which will be about June 15, it will consist of eight hot mills, four roughing mills, and eight cold mills. All will be driven with General Electric motors, on purchased current. The company will make only high grade black sheets. Jacob D. Waddell is president.

The Galvanized Products Company, East Stroudsburg, Pa., has been incorporated with a capital stock of \$200,000 to manufacture iron and steel products. The incorporators are Philip S. Dyer, Mount Arlington, N. J.; Charles G. Shirer and E. R. Yarnelle, Easton, Pa.

The National Bearings Service Company, Wilmington, Del., has been incorporated with a capital of \$100,000 to manufacture a patented roller bearing, known as the Wright taper roller bearing. M. L. Gatchell, L. A. Irwin and Harry A. Davis are the incorporators.

The American Automatic Ordnance Company, Chicago, has been incorporated in Delaware with a capital of \$250,000 to manufacture shell cases and various machine products. M. Luce and K. S. Wilson, Oak Park, Ill., are the principal incorporators.

The Bronze-Alumina Corp., Tonawanda, N. Y., has filed incorporation papers, with a capital stock of \$16,000, to manufacture aluminum, silicon, bronze and iron castings. F. A. Redner, J. E. Kaufmann and J. A. Willing, 141 Masten Street, Buffalo, are the directors.

The Flashlight Signal Company, Philadelphia, has been incorporated in Delaware with capital of \$50,000 to manufacture signal devices. George C. Taggart, Pifco Rankin and Howells Kirk, all of Philadelphia, are the incorporators.

The Capitol Motors Corporation, Fall River, Mass., has been incorporated with a capital stock of \$250,000. Wilhelm Krafve is president and John B. Quinn, 345 Mulberry Street, is treasurer.

The Lone Star Shipbuilding Company, 607 Calvert Building, Baltimore, has been incorporated with 10,000 shares of stock with \$100 par value and 10,000 shares without par value, to engage in the shipbuilding business. The incorporators are Allen E. Moore, George F. Jebbett and Donald Havens.

The New London Shipbuilding Corporation, New York, has filed articles of incorporation in Delaware with capital of \$10,000,000, to operate shipbuilding works. Samuel B. Howard, 28 Nassau Street; H. L. Gunther and William H. P. Roots, New York, are the incorporators.

The Metal Spraying Company, Milwaukee, has been incorporated with a capital of \$25,000 by Francis A. Vaughan, Emmett A. Donnelly and E. J. Huxley.

The Butler Mfg. Company, Indianapolis, manufacturer of automobile parts, specializing in pistons of aluminum alloy and iron, semi-cast or standard cast, piston pins, etc., is planning to install machinery for a second enlargement within a year.

The Bridgeport Metallic Works, Inc., Bridgeport, Conn., is a new corporation to manufacture automobile tools, fittings, etc. It has authorized capital stock of \$150,000 and the incorporators are William V. Thompson, William R. Renesch and May G. Hubbard, all of Bridgeport.

The Black Steel & Wire Company, Kansas City, Mo., has been organized with a capital stock of \$600,000 by H. W. Black, Clint Moore, E. R. Kemp, E. W. Sinclair, and others, all of Tulsa, Okla., to manufacture wire and wire cables.

STEEL AND METAL DIGEST

EDITORS

C. S. TRENCH

B. E. V. LUTY

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NO. 6.

Patriotism.

"This war is a contest in which every individual must give his best, his all, and that lavishly and without a quiver. Love for one's country, in other words, patriotism, and love for our God, in other words, religion, in our opinion, is man's first and supreme obligation. Humanity and family comes second, and personal and business interest far in the rear and not worthy of consideration in crises like the present."—From our editorial in adjoining column.

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The Situation

The developments of the past month have been most disheartening to those who have been predicting an early end of the war. Of course there is always the possibility of internal troubles in Germany and Austria that would bring such an outcome in sight, but an early end of the war seems most unlikely—for the following reasons:

1st. The Russian situation, which is most serious. The result of the revolution has been to throw the entire government there into chaos, and to paralyze all the part Russia was playing in the war. Drunk with the power that has come to the masses, the effort is being made to run the country with a mob of workmen and soldiers whose only desire seems to be to make peace and to divide up property of the country. Unless a strong man who can use dictatorial powers is developed, civil war and chaos seem inevitable, and the Allies will not only be deprived of their greatest man power, but Germany's needs will be replenished by food and other raw materials. The Russian revolution differs from the French revolution, being weak in the head, and therefore weak all over. It may be that a strong understanding and the firm will may be able to bring order out of chaos, but we fear that Russia as a fighting factor cannot be reckoned on for months to come.

2nd. The drive this Spring which might have been successful in ending the war has as far as that result is concerned, been a failure, entirely through the stoppage of Russian offensive on the Eastern front, and the ability of

Germany to mass her troops against the Western offensive.

3rd. The submarine has not been yet mastered, and while there is no chance of England being starved thereby, still German confidence is continued by the results being accomplished. Were the submarine feature completely defeated, we believe Germany would see the uselessness of further fight and quickly strive for peace.

4th. The fighting power of the Allies, excluding the United States, has reached its maximum, and cannot be increased materially. To replace their losses is all that can be expected, therefore, as we will not be in position to help in the field to any extent probably this year, the war, we think, is likely to go on for at least another year.

We will, therefore, as a nation be called upon to play a part of supreme importance in the victory of justice, righteousness and democracy over lawlessness, crime and autocracy, and it will require every energy, power, and self-sacrifice we can render.

The Need for Quick Action.

It is not enough that the final end shall be victory; this is assured. The need is to end the war as quickly as possible.

A tunnel under the English Channel would be a great engineering work, the longest tunnel in the world, and yet if it shortened the war by two days it would by that act pay for its entire cost. Our task is to help win the war, but our great task at the moment is to shorten the war. No doubt we could go blundering along until forced to do our best and then put forth the greatest effort, but what we should endeavor to do is to reach our maximum efficiency as quickly as possible, thereby shortening the war.

Some of us are aroused to the situation and the responsibility resting on us, but not all. That responsibility particularly rests on business men, employers of labor, and our captains of industry.

A democracy is perhaps the worst form of government with which to conduct a war. Let us frankly admit we have a handicap to overcome. This is the experience of nations. But what a wonderful thing it would be if we could

show that after all, here is a democracy that can rise as one man for a grand co-operative effort, every individual doing completely his part through a full realization that this is his individual fight for democracy and liberty!

The vital need is speed and what are to be our difficulties and losses in the future will be gauged by how we employ the next few months.

Our greatest New York citizen, Rufus H. Choate, in his last speech, a few weeks ago, left his dying message to the country and cause which he loved, and had served beyond the limit of ordinary human life, in the words: "For God's sake hurry up".

Our Government Has Risen to the Occasion.

We think it is remarkable how our administration has tackled the enormous and unprecedented responsibilities and they deserve all the confidence and appreciation and loyalty and aid we can give them. The only delays have been in the slowness of Congress to follow the lead given them by the Administration. But it was inevitable there should be delays in that quarter. Thank God we are not an autocracy, neither will we be tempted even in this crisis to become one.

But there is every assurance that in comparison with the other democracies of England and France our speed will be greater, while the mistakes they have made will be profited by and their experiences taken full advantage of.

False Economy and Lack of Confidence in Ourselves.

While we do not believe in the slogan "business as usual" because it is impossible, still there is the greatest need to see that the complicated process of modern life and business are not thrown into disorder by our fears and false economies. It is not enough to continue and increase the productive powers of the country, but consumption and trade must also be as far as possible undisturbed. The enormous taxes that we must face can only be met by the ability to pay them, and this depends on the country continuing prosperous, and that prosperity hangs on business, and a normal attitude of confidence and to expenditures being continued. Extravagance and wasteful-

ness now becomes a crime, but the advice of Mr. Hoover, appointed to regulate the question of food, may in other things be followed.—“Eat plentifully, but wisely”.

Need for Harder and Longer Hours of Work.

Hundreds of thousands of our best are being withdrawn from our factories, fields, and offices, and the process will continue until it reaches enormous proportions. Those who remain at work have an obligation to their country to work harder and longer and to thus do their part in winning the war, and our women must also help. He is unworthy of manhood and citizenship who is not willing to forego ease, pleasure and vacations during this war and to place every ability and energy he possesses into the contest, which will not only be on the field of battle, but in the workshop, the mines, the farms and the offices.

U. S. War Power Is In Its Large Units.

The war has demonstrated the value of large units, particularly so in the case of the U. S. Steel Corporation. The Government has found in these large trade units (we used to call them Trusts a few years ago) organizations by which, on a moment's notice, various industries can be mobilized for the holding of their facilities in readiness for the needs of the Government, and for the switching and directing of their full operations to those economic activities necessary for national preparation and defense. When the economic history of this war is written, their value proved in the emergency will be known to all as it is to the Government and a few at present. The patriotism and ability shown by those who control and guide these business units has been inspiring.

We were woefully unprepared for war as regards our army and in our government in general, but we had the sinews of war in our money power, and a complete preparedness in our large business units. Had the Government, without these units, started to mobilize the producing powers of the country it would have taken months to accomplish what has been done in virtually a few meet-

ings of the managers and directors of our large trade units.

Price Regulations.

Unlike the Allies we have joined, we are producers of virtually everything necessary for prosecution of the war, we therefore believe that should Governmental control of prices become necessary, it will be effective, which has not been the case in that of England, France, etc. But we do not believe it will be necessary. Our producers and manufacturers could and did exploit the necessities of those who had to hurriedly come to them for enormous supplies, but you can't exploit your own Government in time of war, and it will not be attempted as we know how quickly it could be squelched.

The whole attitude of our producers and manufacturers has been to place their plants and commodities at the disposal of the Government and to accept any regulations that may be imposed, and any prices that the Government considered they should accept. Supply and demand will fix prices we believe, and the only interference on the part of the Government should be to prevent control of sinister influence as far as possible. What America needs is some system that will do away with hoarding or hiding of surplus stocks, thus obviating the creation of an apparent shortage and the consequent manipulation of markets. This sort of supervision will bring far better results than the fixing of prices at which commodities may be sold.

The prices therefore that the public will pay will be dictated by actual and not artificial conditions. That prices will continue high goes without saying, but as we are taxing ourselves and selling bonds to make loans to our Allies for the payment of the supplies they buy, we will see that they will be made to pay only reasonable prices. In fact, it seems certain that the war purchases of our Allies will be made at the same basis as our own war purchases, and it should be so. We are giving our money, and later on will give our blood, so also we must give our supplies at reasonable prices. But there are some factors that can't be left to individual action, and on which we believe the American and

English Governments will pool their issues and assume control, namely, the raw materials we need from abroad, lately under foreign control and ocean transportation, but it will be with as little disturbance as possible to the ordinary channels of trade.

Patriotism.

This war is a contest in which every individual must give his best, his all, and that lavishly and without a quiver. Love for one's country, in other words, patriotism, and love for our God, in other words, religion, in our opinion, is man's first and supreme obligation. Humanity and family comes second, and personal and business interest far in the rear and not worthy of consideration in crises like the present.

NECESSARY AND UNNECESSARY BUSINESS

The flood of "literature" in the mails disseminated with the idea of stimulating business, or preventing curtailment in activity in certain lines, prompts to attempt some remarks on a delicate subject, but one that really deserves some attention.

We are thinking in particular of those, and there are many, who urge "business as usual" and do not go farther and discriminate. It has led some daily newspapers to rail at those who do not patronize their milliners or tailors as much as formerly, in the same paragraph that they object to curtailment in road building and road improvement.

We subscribe fully the slogan "Business as usual" if it is interpreted in the light of reason, thus:

First emphasize the word "business" in the slogan. It is business, not pleasure, not extravagance, not waste. Millinery is business from the standpoint of the milliner, but it is frequently extravagance on the part of the buyer. A deal is not good business unless it is advantageous to both parties to it, circumstanced as they are at the time the deal is concluded.

Next put the emphasis of the qualification "as usual" in the slogan. That will cut out a great deal of activity which cannot be indulged in except at an altogether unusual expense. It is

absurd to expect an investment builder to build year after year at the same rate. That is not what he does usually. He endeavors to build when costs are low. If the investment builder obeys the injunction "Business as usual" he will do nothing, for that is his usual practice when costs are abnormally high.

What we need to do is to fight this war out as hard as we can, to get into the thick of it as quickly as we can, strike hard at first that we need not strike so long. We should practice all reasonable economy, but economy is not refraining from expenditures that can properly be made. The test is in the character of the activity. Making expensive hats is one thing and building roads is another. Buying a pleasure car that will simply consume gasoline and rubber is one thing, and buying a truck that may release two drivers and three horses is another.

It seems rather improbable that the propaganda to stimulate people to spend money will do any good, any more than was done by the "sunshine clubs" of 1908. If it is kept up, however, it may lead to clearer thinking and discriminating between activities. It is likely that people will decide for themselves, not according to theories propounded in sermons preached to them, but according to their circumstances. Even in the case of roads, which are often a military necessity, countries and townships are likely to base their decisions, whether or not to build or improve roads, not upon military necessity or the general good of the country, but upon whether the improvements will help their local producers and consumers of foodstuffs. When men's minds are filled with great subjects connected with the war they are not likely to mold their conduct according to theories offered by others. Great economic changes will be forced upon the people and trade will be made by conditions rather than by theory. What is needed is that everybody should work as hard as possible, and to the best advantage and circumstances will probably bring this about, without any theory and perhaps without a great deal of some of the brands of so-called "patriotism" that are being exploited.

Steel For Shipbuilding

There is no common factor by which the layman can consider vessel tonnage in terms of the steel entering into its construction. Reference to vessel tonnage employs three different measures. In connection with the building of vessels the gross ton is used, the unit being 100 cubic feet of space below the "tonnage deck". This is the ordinary gross tonnage. Reference to vessel movement, as the amount entered or cleared at a port in a given time, is made in the net ton, which is the foregoing, less allowance for space occupied by machinery, cabins, etc. Thus the vessel tonnage is a measure of space capacity rather than of weight capacity, while there is no reference whatever to the weight of the vessel itself. Only in the case of war vessels is there reference to weight, war vessels being always referred to in terms of the displacement ton, which of course is determined by the weight of the vessel. Even in this case the computation employs cubic feet, the unit being 35 cubic feet of vessel under the water line, 35 cubic feet of sea water weighing approximately 2,240 pounds.

In October, 1916, when the Navy Department was about to let contracts against the 1916 naval program, the Bureau of Construction and Repair estimated the weight of plates, shapes, angles, etc., required for the four battleships at 13,761 tons each, and for the four battle cruisers at 15,025 tons each. The construction of these vessels is very slow, so that the monthly or yearly consumption of steel is relatively small, when the steel industry is producing over 30,000,000 tons of finished steel a year.

Statistics of American shipbuilding are gathered by the Bureau of Navigation, Eugene T. Chamberlain, Commissioner of Navigation, being in charge, this being a part of the Department of

Commerce, Nineteenth St. and Pennsylvania Avenue, Washington.

Until lately, the maximum merchant vessel building in the United States occurred in the fiscal year ended June 30, 1908, 614,216 gross tons, including sailing vessels, canal boats, barges, etc., wood or steel. The steam vessels built of steel amounted to 442,625 tons. In the fiscal year 1915 the total amount was only 225,122 tons, the smallest amount since 1895. While the output in the fiscal year 1915 averaged only 19,000 tons a month, January, 1916, showed 26,408 tons, and there is ground for estimating the output in the past few months at 90,000 to 100,000 tons a month.

Some data as to individual vessels would suggest that in ordinary vessels the gross ton weight of plates required is in the neighborhood of one-third the gross vessel tonnage, the structural shapes required being something like one-third more. Machinery and equipment would be in addition to this tonnage.

The American steel industry is supplying a great deal of steel to foreign shipyards. Total exports of plates in the calendar year 1916 amounted to 276,034 gross tons, and of shapes to 301,649 gross tons, 678,000 tons in all, doubtless chiefly for shipbuilding.

The American steel industry produced 30,500,000 gross tons of finished rolled steel in 1916, and is producing at a somewhat greater rate at present. A rough estimate would be that at the present moment between 5% and 7% is going into shipbuilding, commercial and war, here and abroad. This has produced a great strain upon the plate rolling capacity, which is far from flexible, but no appreciable strain on any other class of finishing mills.

Business Trends.

April Foreign Trade.

Exports from the United States in April were large for a comparatively short month, one with only 25 business days in it; were, in fact, larger than in all but two months of the past, January and March of this year, and were only 13.5% smaller than the record January total, while 33% heavier than in April a year ago. In connection with this latter feature, however, it is worth noting that the general price level of all products is considerably higher than a year ago at this date, and that this higher level, something like 29%, is not much below the percentage of gain in exports shown over the like month a year ago, namely, 33%. In other words, the expansion in exports over a year ago is largely a matter of price rather than of volume. Imports for April were the second largest ever recorded, falling only 6¢ below the high record month of March, but being less than half the sum of the exports for April.

Our foreign trade for April, for the ten months ending April 30th and for the full period of the war compares as follows:

April—	1917.	1916.
Exports	\$530,000,000	\$398,568,532
Imports	254,000,000	218,236,397
Excess of exports	\$276,000,000	\$180,332,135

Ten months ended April 30th:

April—	1917.	1916.
Exports	\$5,167,000,000	\$3,394,000,000
Imports	2,972,000,000	1,723,000,000
Exc. of exports	\$3,095,000,000	\$1,671,000,000

Summary of trade since the war began:

All months—	Exports.	Imports.
Merchandise.	\$12,114,978,706	\$5,784,669,545
Gold	349,178,702	1,436,462,521
Silver	148,627,116	79,755,090
Total	\$12,612,784,524	\$7,300,887,156

Increased Bank Clearings.

Bank clearings for the month of May, \$26,120,417,882, established a new high record for that month, and are only 3.6% below the highest total ever recorded, that of December last. Indeed,

the showing for the country outside of New York eclipses that of any preceding month. This revelation assumes especial significance in the light of the downward reaction in trade following hysterical buying of foodstuffs, and the conceded fact that certain financial enterprises have been held up while the drive goes on to make the Liberty Loan successful.

Rate of Iron Production Falls Off Slightly.

The "Iron Age" says:

"Pig iron production fell off slightly in May, being at the rate of 110,238 gross tons a day, as against 111,165 tons a day in April, though with 31 days the May production came up to 3,417,340 tons, against 3,334,960 tons in April. There was irregular working in a number of districts, coke shortage being a factor in some cases, while in the Hanging Rock district labor troubles cut down output. The number of furnaces blown in exceeded those blown out or banked by four, so that 340 furnaces, with an estimated daily capacity of 111,704 tons, were active on June 1, against 336 furnaces with a daily capacity of 111,552 tons one month previous. More furnaces are now in blast than in many years. The rate of output in May was exceeded only by that of the preceding month and those of October and November, 1916."

The figures for the daily average production, beginning January, 1914, are as follows (in tons of 2,240 pounds):

	1914.	1915.	1916.	1917.
Jan.	60,808	51,659	102,746	101,643
Feb.	67,453	59,813	106,456	94,473
Mar.	75,738	66,575	107,667	104,882
April	75,665	70,550	107,592	111,165
May	67,506	73,915	108,422	110,238
June	64,916	79,361	107,053	.....
July	63,150	82,691	104,017	.....
Aug.	64,363	89,666	103,346	.....
Sept.	62,553	95,085	106,745	.....
Oct.	77,361	100,822	113,189	.....
Nov.	70,611	101,244	110,394	.....
Dec.	48,836	103,333	102,537	.....

Business Trends.

Commodity Prices Continuing Upward.

The continued upward movement of commodity prices during April is reflected in the index numbers for the end of that month and the beginning of May reported by the "Economist", the "Statist", Bradstreet's and Dun's, all of which attained new high levels. The advance has been quite generally maintained since August of last year only Sauerbeck's compilation, which is continued by the "Statist", showing a variation, a slight decline being recorded at the end of September.

It is interesting to note that while the advance recorded by Dun's and Bradstreet's was greater during April than during March, the British numbers registered a smaller gain. Dun's number increased 3.768 in March and 18.423 in April; the "Economist's" .228 in March and only .79 in April; Sauerbeck's 5.2 and 3.2 respectively. This is probably attributed to the effects of the entry of the United States into the war.

Bradstreet's index number for May 1st is \$15,1203, compared with \$14,5769 on April 1st, a rise of 3.7% and represents an increase of 11.6% since January 1st last, of 28.7% since May 1, 1916 and 75% over the corresponding date of 1914. Comparison with August 1, 1914, when the war began, shows an advance of 73%.

In the following table will be found the index numbers of the two leading American economists:

	Bradstreet's.		Dun's.	
	1916.	1917.	1916.	1917.
Jan.	10.9163	13.7277	137.666	169.562
Feb.	11.1415	13.9427	142.260	176.273
Mar.	11.3760	14.1360	142.110	186.244
Apr.	11.7598	14.5769	145.690	190.012
May	11.7485	15.1203	146.197	208.435
June	11.6887		145.397	
July	11.5294		145.142	
Aug.	11.4414		143.930	
Sept.	11.7803		152.018	
Oct.	12.0299		152.355	
Nov.	12.7992		164.840	
Dec.	13.6628		168.090	

A Remarkable Record of New Enterprises.

The past month holds the distinction of being the most important one in the matter of incorporations for a number of years. Returns now available covering the output of charters in the Eastern States with a capital of \$1,000,000 or over indicate a total of \$388,481,000. This is an increase of over 60% as compared with May a year ago and about 392% two years ago.

The grand total of all companies chartered, with a capital of \$100,000 or over, covering all states, amounted to \$484,683,600, comparing with \$311,745,200 in May last year and \$124,041,000 two years ago.

The charters are so diversified in character that they embrace practically all lines of business. This affords ample evidence of the boom that is now being enjoyed by the iron and steel, ship-building, copper, oil, drug, chemical and other industries. Incidentally extensive and increasing Government demands for war supplies have given a decided stimulus to the promotion of new enterprises.

Following are the comparative figures as specially compiled by The Journal of Commerce and Commercial Bulletin of companies incorporated in the Eastern States during the last three years, with an authorized capital of \$1,000,000 or more.

	1917.	1916.	1915.
Jan.	\$244,450,000	\$270,995,000	\$51,150,000
Feb.	283,815,000	365,995,300	53,950,000
Mar.	281,000,000	194,750,000	70,050,000
April	361,510,000	166,650,000	32,200,000
May	388,481,000	209,735,000	78,950,000
Total	\$1,559,256,000	\$1,108,035,200	\$286,300,000
June	.....	264,350,000	181,247,100
July	..	217,662,500	71,100,000
Aug.		113,472,000	67,100,000
Sept.		164,700,000	286,625,000
Oct.		303,768,700	208,695,000
Nov.		260,407,800	190,075,000
Dec.		239,850,000	135,125,000
Total		\$2,708,726,500	\$1,426,267,100

Production Statistics

Plates, Sheets, Tin Plates and Pipe in 1916,—Gross tons

Detailed statistics of plate and sheet production in 1916 are given on another page. The line between plates and sheets drawn by the American Iron & Steel Institute in gathering the statistics is necessarily by mode of manufacture, the output by light plate mills, of plates under $\frac{1}{4}$ -inch, being included as a separate item, as plates, while the production by jobbing mills, of material 12 gauge and heavier, is included as a separate item under sheets. The classification was adopted for 1913, superseding a much more general classification previously used, which simply drew the line between 12 and 13 gauge. Even this classification had only been adopted in 1905, by the former statistical organization, the American Iron & Steel Association. For comparative purposes we include under plates the jobbing mill output of 12 gauge and heavier in the table below, so that the figures for different years are strictly comparable. Beginning with 1913 tin mill specialties are included with black plates, having formerly been included in sheets. This explains the major part of the apparent drop in sheet production from 1912 to 1913, the tin mill black not tinned having amounted in 1913 to 204,033 tons.

	Total sheets			
	Plates, 12 down.	Sheets, 13 up.	Black plates.	and black plates.
1905.	2,041,206	983,437	507,587	1,491,024
1906.	2,531,552	1,074,525	576,079	1,650,604
1907.	2,660,060	1,084,700	504,072	1,588,772
1908.	1,271,021	864,901	513,771	1,378,672
1909.	2,379,098	1,248,766	606,482	1,855,248
1910.	2,807,728	1,435,619	712,137	2,147,756
1911.	2,334,341	1,358,110	795,598	2,153,708
1912.	3,035,200	1,857,683	982,197	2,839,880
1913.	3,235,107	1,464,631	1,031,299†	2,495,930
1914.	2,237,693	1,302,355	1,179,198†	2,481,553
1915.	3,038,260	1,676,577	1,362,857†	3,039,434
1916.	3,949,193	1,977,788	1,526,999	3,504,787

† Includes tin mill black not tinned.

Galvanizing.

Statistics from the galvanizing departments have been collected only for four years. The production in gross tons has been as follows, of sheets galvanized in the flat form, and of formed products galvanized after forming:

	Flat.	Formed.
1913.	824,046	57,674

	Flat.	Formed.
1914.	806,995	58,752
1915.	706,058	50,086
1916.	601,306	58,171

The high cost of spelter in 1915 cut down the output of galvanized sheets to an extent, but the mills had old galvanized sheet contracts to fill and many lost a great deal of money. In 1916, when the average cost of spelter was somewhat lower, the galvanized sheet output was still smaller, because the mills were through with their contracts. The higher price discouraged buyers from purchasing, and the uncertainties of the situation discouraged mills from endeavoring to sell.

Tin Plate Production.

	Terne Plate.	Tin Plate.	Total.
1906.	86,324	491,238	577,562
1907.	69,842	444,963	514,775
1908.	68,830	668,257	537,087
1909.	85,237	526,722	611,959
1910.	75,082	647,688	722,770
1911.	70,733	713,227	783,960
1912.	85,445	877,526	962,971
1913.	61,136	762,583	823,719
1914.	65,266	865,975	931,241
1915.	72,978	982,958	1,055,936
1916.	95,615	1,139,385	1,235,000

Tubular Goods.

The production of all descriptions of welded tubular goods, standard pipe, oil country goods, boiler tubes, etc., has been as follows:

	Iron.	Steel.	Total.
1913.	276,067	1,969,465	2,245,532
1914.	36,939	53,656	90,595
1915.	206,513	1,713,161	1,919,674
1916.	278,117	2,372,941	2,651,058

Production of seamless tubes has been as follows:

	Hot finished.	Cold drawn.	Total.
1913.	42,740	65,827	108,567
1914.	36,939	53,656	90,595
1915.	63,488	76,180	139,668
1916.	61,235	129,238	190,473

Production of welded tubular goods in detail in 1916 is given below:

	Iron.	Steel.	Total.
Black, standard	119,694	1,021,949	1,132,655
Galvanized	28,540	262,473	291,013
Oil Country			

	Iron.	Steel.	Total.
g. ds.	85,855	854,686	940,491
O. D. and misc.	136	138,627	138,763
Boiler tubes . .	52,642	95,206	148,148
Total	278,117	2,372,941	2,651,058

Production of cast iron pipe in 1916 was 1,080,623 net tons, with 133,710 net tons of fittings, making a total of 1,214,333 net tons, against 1,214,870 net tons in 1915. All other iron and steel statistics are reported on gross tons.

Substitutes for Tin Cans.

How to Offset Any Possible Shortage.

The Department of Commerce in co-operation with the Department of Agriculture has long been earnestly striving to increase the output of tin cans for food containers. To this end it has endeavored to increase the supply of tin, to secure the continuous movement of the materials entering into tin cans from the place of production to the place of use, and to facilitate the supply and movement of machinery for producing cans. The Department desires in every practicable way to promote the present and permanent prosperity of the tin can industry. There is no possible doubt of the steady and growing demand for its products.

Tin plate is 98% steel and 2% tin. Steel is the backbone of war, and the mills have not been able to keep all their customers fully supplied at all times. Moreover, abnormal freight demands have made prompt deliveries uncertain. There have also been decreased production and reduced shipping facilities. It is not surprising, therefore, that the tin plate makers can not provide the can manufacturers with sufficient plate to enable them to meet the increase in the demand for cans, which is 25 to 40% greater than it was last year.

It is therefore imperative that the available supply of cans be utilized, in so far as possible, for packing products that can be preserved only in tin, and that substitutes be used for other products wherever practicable. Such containers should be cheaper than tin, so that the ultimate benefit from lower costs may offset the initial expense of the substitution.

Cost and Description of Fiber Containers.

The price of glass has steadily risen

and has reached a point at which any large extension of its use for food containers is impracticable. At present fiber or paper containers of good quality are being produced in considerable and increasing quantities, and for many purposes are supplanting glass and tin plate. The price of fiber containers depends upon the size, the quality of the paper-pulp material, the number of treatments with paraffin, and the amount of printed matter on the outside. The commoner types may be obtained at 1.25 to 1.5 cents for the half-pint size, 1.25 to 1.6 cents for the pint size, and 1.5 to 1.65 cents for the quart size.

Fiber containers are made in various shapes and sizes adapted to different purposes and may or may not be coated with paraffin, which is chemically inert and is sometimes baked into the paper material. Some of these containers are claimed to be air-tight, proof against leakage, and protected from contamination by the paraffin. Some containers appear to be more nearly air-tight than others of the same style, probably because of better fitting covers. These containers are light in weight, pack readily for shipment, are easily opened, and are used but once.

Fiber Containers for Delivering Foods to Consumer.

The demand for "ready-to-eat" foods," such as baked pork and beans, spaghetti, etc., with the simple direction "Heat and serve," represents the largest factor in the increased use of tin cans. These foods must be processed in the containers at or above the temperature of boiling water, and no substitute for tin has been found that satisfactorily meets these conditions. However, a great economy in tin can be

effected by home cooking of such products during the present shortage.

Fiber containers are recommended for the distribution by the retailer of many foodstuffs, including milk, cream, buttermilk, ice cream, oysters, sirups, marshmallow creams, dried fruits, preserves, jellies, mincemeat, horse-radish, relishes, pickles, deviled ham and chicken, vinegar, dry and prepared mustard, soda water, salads, sauerkraut and olives.

Fiber Containers for Packing and the Wholesale Trade.

It is claimed that dry food products such as coffee, tea, alum, baking powder, spices, raisins, and prunes may be successfully packed by producers and manufacturers in paper or fiber containers. For some of those products, bags lined with tinfoil have been in successful use for ten years or more and they form an attractive package that is said to be moisture proof.

Other commodities usually packed in tin could be marketed as well in paper or fiber, with the advantage of lower cost. Among these tobacco occupies a conspicuous position, and other articles are lye, cleansers, soap powders, shoe polishes, metal polishes, soaps and shaving preparations, toilet articles, such as talcum powder, and various dry drugs and chemicals. Paper containers are also suggested for preserved fruits and jellies made at home. Cloth sacks for tobacco and wood for sirups and molasses are also recommended where retail sales can be made in bulk.

For packers of dry products who are opposed to the adoption of fiber containers because of the good will built up upon the style and shape of a tin

container, fiber containers having a tin top and bottom are available. These containers, when labeled, have the appearance of all-tin cans, and are almost as serviceable.

Purchasers of large quantities of foodstuffs, such as hotels, restaurants, and boarding houses, can also contribute directly to the tin-saving campaign by buying supplies in large cans instead of small ones. In addition to aiding in tin conservation, they will thus get the supplies at a lower rate.

Tests of Substitute Containers—

Certain types of these containers are now being tested to determine to what extent the claims of their manufacturers as to their general qualities can be substantiated. Manufacturers of substitute containers who wish their products tested should send samples to the Bureau of Standards, Department of Commerce, with full information regarding commodities for which the containers are specially designed, prices, and ability to contract for early deliveries. Names and addresses of firms prepared to supply fiber and other containers may be obtained from the Bureau of Foreign and Domestic Commerce or its district or co-operative offices. Co-operation is required between the Government departments, the manufacturers of tin plate and of substitute containers, the packers of foodstuffs and of other articles commonly put up in tin, and the general public, if the available supply tin plate is to be limited to strictly necessary uses and if, at the same time, the largest possible quantity of food is to be preserved against the special needs of the coming months.

The Steel Production Statistics.

The official statistics have just been made public covering production in 1916 of steel ingots and castings and finished rolled iron and steel, together with the still more finished products, tin and terne plate, cut and wire nails and cast and wrought pipe. The production of pig iron was reported in February.

In our issue for last January, page six, we presented our estimates of production in the year just closed. As the official statistics come six months later the trade may be interested to see that our estimates were much closer than necessary for practical purposes. The comparison is as follows, in gross tons:

	Estimate.	Official.	Difference.
Pig iron	39,500,000	39,434,797	0.165%
Steel ingots and castings . .	42,500,000	42,773,680	0.641%
Rolled steel	30,500,000	30,557,818	0.189%
Rolled iron.	1,500,000	1,822,571	17.7 %

As full statistics for previous years are given in our annual **Metal Statistics** (pp. 137-141) it is only necessary to present the new statistics here. Last year's production of steel was as follows, in gross tons:

Ingots.

Basic open-hearth	29,011,146
Acid open-hearth	1,227,832
Bessemer	10,916,248
Crucible	120,341
Electric	126,048
Miscellaneous	302
Total	41,401,917

Castings.

Basic open-hearth	605,512
Acid open-hearth	570,937
Bessemer	142,791
Crucible	9,351
Electric	42,870
Miscellaneous	302
Total	1,371,763

On account of the production of shell steel, involving heavy discards from the ingot or billet, the proportion of rolled steel to steel ingots was unusually small in 1915, and thus it resulted that the production of ingots in 1915 exceeded the production in either 1912 or 1913, while the production of rolled steel fell short of the output in those years. Thus in ingots the 1916 output breaks the record of 1915 while in rolled steel the 1916 output breaks the record of 1913.

The increases over the previous records are: Ingots, 32%; rolled steel, 32%. Rolled iron showed the largest output since 1907. Steel castings made a new record, breaking that of 1913 by 34%.

The detailed statistics are given on the following pages.

The plate statistics show that the output of sheared plates one-quarter-inch and thicker was 1,865,642 gross tons. This is apart from universal mill plates and lighter plates, and was at the rate of a trifle more than 150,000 gross tons a month. Interest at the present time centers on the capacity available for the production of plates suitable for shipbuilding, this involving, in general, wide plates three-eighths-inch and thicker. The production of such plates in 1916 was probably somewhat under 125,000 tons a month, but with increases in capacity to date the present monthly capacity in such plates may be close to 150,000 tons a month. Trade estimates we have recently quoted put the capacity at 125,000 tons as minimum. The Shipping Board's program, for the building of small steel freighters, has been estimated to involve about 40,000 tons a month.

Rolled Iron and Steel Production in 1916.

Official statistics of production in 1916 have just been made public, the figures all representing gross tons. Full statistics for previous years are given in our annual **Metal Statistics**, pages 137-141 for rolled products in general and pages 117 and 119 for sheets and plates.

Finished Rolled Iron and Steel.

	Iron.	Steel.	Total.
Rails .....	.....	2,854,518	2,854,518
Plates and sheets	13,303	7,440,677	7,453,980
Nail and spike plate	2,979	27,109	30,088
Wire rods	867	3,517,879	3,518,746
Structural shapes	1,823	3,028,141	3,029,964
Merchant bars	993,948	5,623,598	6,619,546
Bars for reinforced concrete work	2,683	458,717	461,400
Skelp, flue, and pipe iron or steel	355,445	2,572,229	2,927,674
Long angle splice bars, tie-plate bars, etc...	77,656	614,164	691,820
Hoops	630	367,534	368,164
Bands and cotton-ties .....	.....	173,311	173,311
Rolled sheet piling, not including fabricated .....	.....	19,196	19,196
Railroad ties .....	.....	34,311	34,311
Rolled forging blooms, forging billets, etc.	549	2,015,411	2,015,960
Exports of blooms, billets, sheet bars, etc. ....	.....	512,483	512,483
All other finished rolled products	372,688	1,296,540	1,669,228
Total	1,822,571	30,557,818	32,380,389

Plates and Sheets.

	Iron.	Steel.	Total.
Universal plates, including flats or bars over 6 in. wide:			
$\frac{1}{4}$ of an inch and over in thickness ..	4,013	1,166,952	1,170,965
Under $\frac{1}{4}$ of an inch thick	2	53,267	53,269
Total universal plates	4,015	1,220,219	1,224,234
Sheared plates:			
$\frac{1}{4}$ inch and over in thickness	1,142	1,864,500	1,865,642
Under $\frac{1}{4}$ inch thick	321	587,187	587,508
Total sheared plates	1,463	2,451,687	2,453,150
Black sheets, made on either sheet or jobbing mills:			
No. 12 gauge and thicker	29	271,780	271,809
No. 13 gauge and thinner	5,918	1,971,870	1,977,788
Total black sheets	5,947	2,243,650	2,249,597
Black plates rolled on tin mills:			
Black plates for tinning	1,878	1,281,924	1,283,802
Other black plate specialties .....	.....	243,197	243,197
Total black plates rolled on tin mills.	1,878	1,525,121	1,526,999
Grand total of plates and sheets	13,303	7,440,677	7,453,980

Sheared Plates According to Mode of Manufacture.

Mode of Manufacture.	Iron.	Steel.	Total.
Sheared plates, rolled on single stands of rolls:			
¼ inch and over in thickness	1,142	1,752,905	1,754,047
Under ¼ inch thick	321	228,495	228,816
Total rolled on single stands	1,463	1,981,400	1,982,863
Sheared plates roughed and finished on separate stands:			
¼ inch and over in thickness		111,595	111,595
Under ¼ inch thick		358,692	358,692
Total roughed and fin. on sep. stands		470,287	470,287
Total sheared plates	1,463	2,451,687	2,453,150

Universal Plates by Widths.

	Iron.	Steel.	Total.
Under 30 inches wide	4,015	952,571	956,586
30 inches wide but under 48 inches wide ..	.....	247,545	247,545
48 inches wide and over .....	.....	20,103	20,103
Total	4,015	1,220,219	1,224,234

Sufficient Iron Ore.

There is little danger that there will be any curtailment in iron production between now and the opening of lake navigation in 1918 by reason of there not being enough iron ore, despite the fact that shipments down the lake this season to June 1st are 3,612,847 tons short of the movement in the same period last year. This is but one unfavorable factor. Another is that more coal is to be moved up the lakes than last season. Another is that the ice which curtailed the movement up to June 1st also disabled some boats which cannot contribute their full service in June. Favorable factors are:

(1) There are new vessels this season, originally computed to contribute

3,000,000 tons of ore movement this season, an estimate which probably must be cut down somewhat now.

(2) The pooling system for lake coal, and the better despatch all around due to the special arrangements made under the war program, will help materially in dispatch.

(3) Last year's ore movement was in excess of the actual requirements.

(4) Arrangements are being made whereby each furnace will be given just enough ore, those having arranged for more than needed being cut down. The canvass of the situation as to each furnace is now being completed.

The statistics of Lake Superior iron ore shipments by months are given below:

Lake Superior Iron Ore.

Shipments of iron ore down the lakes have been as follows, in gross tons:

	1913.	1914.	1915.	1916.	1917.
April	866,386	269,686	503,832	1,658,411	211,532
May	7,284,212	3,852,063	5,012,359	8,449,580	6,283,612
June	7,974,444	5,502,367	6,005,091	9,507,576	
July	8,204,416	5,784,514	7,204,021	9,750,157	
August	7,677,601	5,869,477	8,081,117	9,850,140	
September ..	7,258,413	5,431,307	7,863,146	9,600,786	
October	6,526,103	4,242,392	7,146,873	9,116,196	
November ...	3,270,958	1,070,092	4,445,129	5,715,452	
December ..	18,545	.....	57,236	1,085,900	
Season Lake	49,070,478	32,021,897	46,318,804	64,734,198	6,495,144

Topical Talks on Iron.

L.—P lates.

Plates have assumed a position of great importance in connection with the war by reason of their being needed in large tonnages for shipbuilding. On account of the rolling of steel being so highly specialized it is impossible to increase the production of plates on short notice. If the entire output of the American steel industry could be converted into plates of the sizes needed in shipbuilding it would be possible in about six months' time to furnish all the plates needed to rebuild the world's merchant marine as it existed when the war started. Nevertheless, strain as they would, the plate mills were able in 1916 to turn into such plates as could be used for shipbuilding only between 5% and 6% of the total steel produced. Indeed, with all the pressure there was to obtain ship plates the production of such plates was a shade smaller proportion of the total steel production in 1916 than was the case in 1913, the year before the war.

In the last Topical Talk reference was made to slabbing mills, which furnish the bulk of the semi-finished steel rolled by plate mills. The raw material of the plate mill is customarily called a slab, but there are blooming mill slabs, in which the thickness and length may be varied but not the width, as the rolls are grooved. The slab produced by the slabbing mill is variable in all dimensions as the slabbing mill is universal, having vertical rolls which can be set to roll different widths, so that all three dimensions can be varied. In any case, of course, the variation in length is produced by shearing.

Plate mills fall into various classes. As to the character of product they are divided into sheared plate and universal plate mills, the sheared plate mill having plain rolls, whereby the sides of the product must be trimmed or sheared, while the universal mill has vertical rolls, so that the edges are rolled true. The universal plate mill has two-high horizontal rolls as a rule, though occasionally they are built three-high. The Harrisburg Pipe & Pipe Bending Com-

pany, Harrisburg, Pa., for instance, has a three-high universal plate mill, built in 1913, the horizontal rolls being 21¼ inches diameter by 23 inches face, with vertical rolls 14½ inches diameter. This mill rolls plates four to 18 inches wide, and down to No. 15 gauge in thickness. Two-high universal plate mills are, of course, reversing, the material passing back and forth through the same passage.

The large sheared plate mills are all three-high. The mill was invented by Mr. Bernard Lauth, of a couple generations ago, and was patented. The point of the invention is that the middle roll is made smaller than the top and bottom rolls, about two-thirds the diameter, whereby it has a working or kneading action on the steel and facilitates reduction, while rigidity is furnished by its being backed up alternately by the top or bottom roll. Smaller sheared plate mills are two-high, reversing, frequently with a separate roughing stand, also reversing. There are variation gradations in size in plate mills, and broadly speaking the limitation is in the width.

As may be inferred from the foregoing, the capacity of a given plate mill is determined in considerable part by the form and weight of slabs available for it. The attendant equipment on the other side, straightening rolls, shears, storage, etc., is also very extensive. Thus the installation of a plate mill is a much greater undertaking than the mere setting up of the stand of rolls, and that is why plate rolling capacity has not increased rapidly under the stimulus of an altogether unprecedented demand. Increases in plate rolling capacity are sometimes effected by changing the mill furnishing the raw material rather than the mill itself. Thus at the Lorain Works of the National Tube Company there has been a 34x90 inch sheared plate mill and a 30x48 inch universal plate mill. The latter has been used for rolling universal plates, for pipe, but it is now being altered so as to produce slabs instead, to serve the 90-inch plate

mill, the capacity of which will thereby be very considerably increased.

The total production of plates in 1916 was 3,677,384 gross tons. This was the production of mills regularly classed as plate mills, excluding skelp, of course, and including plates as thin as rolled by even the light plate mills. The jobbing mills, however, had an output of 271,809 tons of material 12 gauge and heavier, and as there was plate tonnage of 587,508 tons, under one-quarter inch in thickness, it is probable that the two classes of material overlapped somewhat.

Of the total plate production, 3,677,384 tons, 1,224,234 tons or precisely one-third was by universal mills, practically all of the tonnage being under 48 inches wide, so that the universal plate mill output is to be counted out entirely in the matter of plates for shipbuilding. Of the remaining two-thirds, the sheared plate tonnage, 24% was less than one-quarter inch thick, and this must also be counted out. The remainder, 1,865,642 tons, or between 50 and 51% of the total output of plates, was in plates one-quarter inch thick and heavier, and of all widths. Even a portion of this would not be available for shipbuilding, as one-quarter-inch plates are too light, and some of the mills contributing to the output could not roll plates wide enough.

Allowing for some increase in capacity to the present time, over the average capacity operating in 1916, and allowing also for the fact that some mills could doubtless have rolled wider and heavier plates than they did, the present mill capacity, in plates suitable for shipbuilding, may be taken at about 150,000 gross tons a month. There are mills under construction, by the new Worth organization, Carnegie, Illinois, Bethlehem, Brier Hill, Corrigan, McKinney & Company and Ashland, with a prospective capacity of about 75,000 tons a month, practically all in sizes suitable for shipbuilding. A small portion of this capacity is likely to come in before the end of this year.

A rough estimate is that as shipbuilding goes the tonnage of plates required for a vessel is about one-third the gross register tonnage. The latter, of course, is not a measure of weight but of capacity, the gross tonnage of a vessel being the number of units of 100 cubic feet capacity below the tonnage deck, the net register tonnage being the same, minus allowance for cabins, machinery, etc. There is also a tonnage of structural shapes required, about one-third as great as the tonnage of plates, but the structural shapes present no problem as the structural mills could turn out a larger tonnage than at present, merely by their being furnished more steel.

Steel Plants.

XIX.—Minnesota.

The newest steel plant of the United States Steel Corporation, and a relatively small one, as Steel Corporation plants go, is the Duluth plant, located near Duluth, Minn. For a long time the Steel Corporation had felt that it should have a plant in the Northwest, on account of the growing steel consumption there, and Duluth of course, was the natural selection. There arose a feeling among the people of Minnesota that the state was losing by all its iron ore being shipped elsewhere. While taxes on the ore in the ground, as real estate, were greatly increased, a

proposition to place a tax of five cents on each ton of ore mined, in addition, failed only through the veto of Governor Johnston. The Steel Corporation undertook to build a steel plant at Duluth if the tonnage tax were not imposed, and hastened its already conceived plans.

The plant was a long time in building, and was completed barely in the nick of time, the two blast furnaces being blown in about the end of 1915, the first steel being made in December, 1915. The plant comprises 90 by-product coke ovens, two blast furnaces, 90

by 22½ feet, ten 75-ton basic open-hearth furnaces, 40-inch two-high blooming mill, 28-inch combination rail, bar and structural mill, with six stands of rolls two-high and two stands three-high, 18-inch rail, bar and structural mill with one stand two-high rolls and two stands three-high, and continuous combination merchant mill with 16, 12, 10 and 8-inch rolls.

Located in such a cold climate the building construction is quite different from the average in the Central West. As a sort of antithesis, in appearance,

the blast furnaces are thin-lined, i.e., the lining is thin, with water cooling system on the outside. Such construction, however, is quite desirable when the temperatures run to such extremes.

The Minnesota Steel Company is not often heard of. As to ownership, it is a Steel Corporation subsidiary, the same as the others, but its officers are chiefly Steel Corporation officials, and the operation as well as the sale of the products is by the Illinois Steel Company.

“A Contract is a Contract.”

On October 1st last the National Association of Sheet & Tin Plate Manufacturers issued a pamphlet relative to the condition of the trade in the matter of contracting for materials. Since that time a uniform contract, then under consideration, has been approved. This contract is now in use by nearly all the members of this Association, as well as by iron and steel manufacturers in general. Many trade associations have also considered and approved this or a similar contract; others have it under consideration in connection with their efforts to improve trading conditions.

Since publishing the pamphlet, this Association has been endeavoring in reasonable and lawful manner to promote general and extensive reform, in harmony with the resolution, and manufactures' and trade letters printed therein also in furtherance of one of the objects for which this Association exists, i. e., to eliminate all unsound and unfair practices and methods. Much progress has been made. Except for government requirements and unsatisfactory traffic conditions, nearly all

sheet and tin plate manufacturers would complete in June contracts calling for delivery over the first half of 1917. This is the first time in many years on an advancing market that this condition has existed. On a declining market, business booked could be retained only at the expense of reduction in price. The practice of guaranteeing against market decline is rapidly disappearing, regardless of the form of contract used.

Both buyer and seller are now exercising caution and contracting only for such tonnage as can be shipped by the seller, and specified for and received by the buyer. Under these conditions, as stated by Mr. G. H. Jones, Vice President of the Inland Steel Company, "the astute buyer will carefully consider the time to buy, knowing that his judgment will be the measure of his success." On the other hand, the incentive or need for overselling is removed, and the manufacturer allots and distributes tonnage intelligently and in keeping with his known capacity.

PURCHASE AND SALES CONTRACT

No. 191....
..... hereby sells and agrees
to deliver and
hereby purchases and agrees to receive and pay for, the following material, at the prices and upon the terms specified, and subject to the conditions herein expressed; said material to be within the limits manu-

factured by the Seller subject to the Seller's standard manufacturing variations and classifications.

**Quantity
Description of
Material
Time of
Shipments
Prices**

base, to which prices will be added or deducted the Seller's regular differentials in accordance with list dated attached thereto.

Delivery

The place of delivery under this contract is f. o. b. railroad cars at the Seller's works, for shipment to.....

Note

"If by reason of demands or requirements by the United States Government directly, or indirectly, by purchases for use in government contracts or for government work, or if by reason of such demands or requirements the seller shall be unable to secure material for manufacture in order to complete delivery, the seller shall be unable to make deliveries as provided by this contract, the seller shall have the right to deduct from the contract such separate monthly quotas as the seller is unable to furnish for this reason, provided the seller furnish to the buyer reasonable visible evidence of such government demands or requirements. In this event, the seller shall not be liable to liquidated damages specified above under the heading 'Special Agreement.'"

The above prices include a freight allowance of without discount, to be paid by the Buyer and deducted from face of invoice, except that no deductions for freight allowance shall be made on shipments of less than 300 pounds, nor in excess of actual weights.

**Terms of
Payment**

Payment to be made in New York exchange or its equivalent. Freight charges to be paid in cash by the buyer.

Specifications

Complete specifications for each month's shipment shall be furnished, days before the first day of the month in which shipment is to be made.

**Special
Agreement**

The Buyer's failure to furnish specifications as herein provided shall be deemed a refusal to accept the tonnage unspecified which thereupon shall be deducted from the contract; and the Buyer shall pay to the Seller, as liquidated damages and not as a penalty, the difference between the contract price of such material for which the Buyer has failed to furnish specifications (less freight allowance, if any) and the market value thereof at the time of such failure; but such damages shall not be less than ten per cent. (10%) of said contract price.

If the buyer shall have furnished complete specifications as above provided and shipments are not made by the Seller as herein agreed, the tonnage which the Seller has failed to ship shall be deducted from the contract, and the Seller shall pay to the Buyer, as liquidated damages and not as a penalty, the difference between the contract price of such material which the Seller has failed to ship (less freight allowance, if any) and the market price thereof at the time of such failure; but such damages shall not be less than ten per cent. (10%) of said contract price.

In all cases, the average prices, at the time of failure, as quoted in "The Iron Age" and "The Iron Trade Review," f. o. b. Pittsburgh, computed on base gauge, shall be the determining market price factor.

Weights

The standard for gauges and weights of hot rolled sheets shall be that adopted by the U. S. Government July 1, 1893, and known as U. S. Standard gauge. The allowable variation from these weights, No. 17 gauge and lighter, shall be $2\frac{1}{2}\%$ over or under and for No. 16 gauge and heavier, 5% over or under.

General

If the Buyer fails to fulfil the terms of payment under this or other existing contracts between the Buyer and the Seller, the Seller may defer further shipments until such payments are made, or may, at its option, terminate this contract. The Seller reserves the right, even after partial shipments on account of this contract, to require from the Buyer satisfactory security for performance of the Buyer's obligations; and refusal to furnish such security will entitle the Seller to suspend shipments until such security is furnished or to terminate this contract. Termination of the contract under any of these conditions, shall not prejudice any claim for damages the Seller may be entitled to make.

Freight Rates

In all quotations and sales which include a freight allowance, the

price or prices quoted are based upon carload freight rates in effect at the date of the agreement, subject to prescribed lengths, minimum weights and minimum charges. In the event of an increase in such freight rates, the amount of such increase shall be added to the price of and to the freight allowance on all materials shipped under the increased rates; and in the event of a decrease in such freight rates, the amount of such decrease shall be deducted from the price of and from the freight allowance on all materials shipped under the decreased rates.

Routing of Shipments

The Seller is entitled to select the routing for all goods sold with freight allowance. On goods sold f. o. b. mill without freight allowance, the Buyer is entitled to select any routing officially authorized and published by transportation companies, provided he advises the Seller of such routing at the time of placing the order or specifications. The Seller reserves the right, however, to select the initial line, if inability to secure cars promptly or other reasons would involve delay in forwarding goods over the route selected by the Buyer.

Delays in Execution of Orders or Shipment of Goods

1-a. The Seller shall not be liable for failure to perform this contract in whole or in part, if such failure is the result of fires, strikes, floods, differences with employees, casualties, delays in transportation, shortage in cars or other causes beyond the seller's reasonable control; nor shall these exemptions be limited or waived by any other terms of this contract, whether printed or written. In the event of unavoidable delay due to any of the above mentioned causes, the buyer may deduct from the contract such portion of the material already specified, shipment of which has not been made as agreed, as is not manufactured or in process of manufacture, at the time his request to deduct reaches the seller's works. The buyer's request for deduction must be in writing. The seller shall in no event be liable for consequential damages.

1-b. The buyer shall not be liable for failure to specify or receive material (other than that manufactured or in process of manufacture) under this contract, if such failure is due to fires, floods, strikes or other legitimate causes, making it impossible for the buyer to receive material under the contract; provided the buyer shall promptly notify the seller fully in writing of the cause of the failure. The seller shall have the option upon such failure on the part of the buyer, to deduct from the contract such material as the buyer shall have failed to specify or receive; but in case the seller shall not exercise this option to deduct, the buyer must specify and receive such material as soon as the cause of the failure has been removed, subject to delay in shipment caused by such failure to specify or receive.

1-c. Insistence upon suspension of manufacture or of shipment covering material already specified, except as provided in paragraph 1-a and paragraph 1-b, may be treated by the seller as a wrongful termination of this contract on the part of the buyer; and the buyer shall thereupon be liable for all damages arising out of such termination, as provided in the "Special Agreement."

Guarantees

The Seller agrees to replace steel proved to be defective in manufacture or unfit for the purpose for which it was sold, provided the quality and purpose are stated in the contract; but the Seller will not pay any claims for labor on such steel nor for consequential damages. In all cases full opportunity shall be given for investigation by the Seller's representatives. Goods must not be returned except by written permission of the Seller.

Shortages, Reclamations, Etc.

The quantity of material shown by invoice shall in all cases govern settlements. Claims for errors, deficiencies, or imperfections will not be entertained by the Seller unless made within thirty days after receipt of the goods.

Damage in Transit

The Seller agrees that the goods shall be delivered to the transportation company in good condition; and the Buyer assumes all risk of rust, delay, loss or damage during transportation.

Agreements

There are no understandings or agreements relative to this contract that are not fully expressed herein, and no changes shall be made in this contract unless reduced to writing and signed by both parties.

Place of Execution and Performance

This contract shall be considered as made to be performed in the State of and all questions that may arise in connection therewith shall be determined by the laws of said State.

This contract is not valid and binding upon unless signed on its behalf by and is subject to acceptance reaching seller not later than

Signed and delivered in duplicate.

By

By

British Export Prohibitions.

The exportation of the goods mentioned in the Schedule hereto be prohibited as follows by a Royal Proclamation:—

1. Goods marked (A) to all destinations;

2. Goods marked (B) to all ports and destinations abroad other than ports and destinations in British Possessions and Protectorates.

3. Goods marked (C) to all destinations in foreign countries in Europe and on the Mediterranean and Black Seas, other than France and French Possessions, Russia, Italy and Italian Possessions, Spain and Portugal, and to all ports in any such foreign countries, and to all Russian Baltic ports.

(A) Aluminum powder; alloys of aluminum and manufactures of aluminum.

(B) Antimony and alloys of antimony.

(A) Bottles, metal, such as can be used for containing mercury.

(B) Cadmium, alloys of cadmium and cadmium ore;

Chemicals, drugs, dyes, dye-stuffs, medicinal and pharmaceutical preparations, the following:

(A) Lead compounds and mixtures containing lead compounds, manganese, peroxide of and mixtures and preparations thereof, mercury nitrate, nickel nitrate, sulphur and preparations containing sulphur, titanium compounds, zirconium compounds;

(B) Copper sulphate, mercury compounds and preparations thereof (except nitrate of mercury), and mixtures containing such compounds of mercury, nickel oxides and salts of (except nickel nitrate), and mixtures containing sub-oxides and salts of nickel, thorium, oxide and salts of, tin, chlorides of, tin, oxide of, and mixtures and preparations containing tin oxide, zinc chloride and sulphate and mixtures containing zinc chloride or sulphate, zinc sulphide;

(C) Iridium compounds, oxides of iron, manganese compounds not otherwise prohibited, palladium compounds, rhodium compounds, ruthenium com-

pounds, tin compounds of (except chlorides and oxide of tin);

(B) Chrome ore;

(B) Cobalt, cobalt ore, and alloys of cobalt;

(A) Copper manufactures, the following:—All articles wholly or partly manufactured of copper or its alloys except articles partly manufactured of copper or its alloys in which the total weight of copper and copper alloy does not exceed 5% of the total weight of the article and does not exceed 56 pounds; Copper ore, regulus, matte, concentrate and precipitate; Copper stamps for stamping woven piece goods; Copper whether refined or unrefined, unwrought, wrought, or partly wrought of all kinds and descriptions, including brass, bronze, yellow metal, and all other alloys of copper;

(B) Emery and corundum and manufactures thereof, carborundum, alundum, crystolon and all other artificial abrasives and manufactures thereof;

(C) Felspar;

Ferro-alloys, the following:—

(A) Ferro-molybdenum, ferro-tungsten, ferro-silicon;

(B) Ferro-cerium, ferro-chrome, ferro-manganese, ferro-nickel, ferro-titanium, ferro-vanadium, silicon-spiegel, spiegeleisen;

(C) Iridium and its alloys;

(A) Galvanized sheets, corrugated or flat;

(B) Graphite, and mixtures containing graphite;

(A) Iron and iron articles containing chrome, cobalt, molybdenum, nickel tungsten, or vanadium; Iron angles, channels, joists, tees, and other sectional material; Iron bars, including flats, rounds, and other sections and shapes; Iron billets, blooms and slabs; Iron bridgework, pier work, and constructional material; Iron hoops and strips; Iron ingots; Iron ore; Iron, pig; Iron pipes wrought; Iron plates and sheets; Iron pyrites; Iron scrap; Iron sheet bars; Iron tubes;

(B) Lead ore;

(A) Lead, lead alloys, and manufactures of lead or of lead alloys; Lead-coated sheets;

(A) Magnesite and magnesite bricks; Magnesite, caustic, or lightly calcined, and dead burnt magnesite;

(A) Magnesium and its alloys;

(B) Manganese and manganese ore;

(A) Mercury;

(B) Molybdenum and molybdenite;

(B) Nickel, alloys of nickel, and nickel ore;

(C) Nickel manufactures, not otherwise prohibited (except nickel-plated goods);

(C) Palladium and its alloys;

(A) Pipes, cast iron;

(A) Platinum, alloys of platinum and manufactures containing platinum;

(B) Plumbago;

(C) Railroad material (except railway carriages, locomotives and wagons, and other component parts, steel rails, and steel sleepers);

(A) Railway material of iron or steel, the following:—Rails, Sleepers, Springs; other railway constructional

material:—Wheels, Axles, and Tires;

(C) Rhodium and its alloys;

(C) Ruthenium and its alloys;

(B) Selenium;

(A) Silicon-manganese;

(A) Spelter and spelter dross;

(B) Spiegeleisen;

(A) Steel containing tungsten or molybdenum, and any tools or other articles made from such steel: Steel and steel articles containing chrome, cobalt, nickel or vanadium; electric lamps; tungsten ores (including ferberite, hubnerite, scheelite, and wolframite);

(A) Uranium, alloys of uranium, and uranium ores;

(B) Vanadium;

(A) Wire, barbed and galvanized wire and implements for cutting or fixing such wire: Wire iron; Wire rods, iron; Wire, steel; Wire rods, steel; (B) Wires, insulated;

(B) Wolfenite;

(A) Zinc ashes; Zinc, alloys of zinc, manufactures of zinc, and zinc dust;

B) Zinc ore;

(A) Zirconium and its alloys; (B) Zirconium minerals.

The Iron and Steel Situation.

Features of May.

Pig iron advanced about \$4.20 against \$3.20 in April.

Billets advanced about \$10 against the same amount in April.

Sheet bars advanced about \$15 against \$10 in April.

Finished steel advanced about \$8.50 per net ton against \$7.35 in April.

Steel bookings less than shipments, against an excess in April.

Our review of April suggested that little evidence of a change in the iron and steel market was found attributable to the entrance of the United States into the war.

May is different. There is a fundamental change, but it is complex in character. Summing up the totals of market factors there is, it might perhaps be said, a very decided increase in the strength, but in detail there is found to be a very decided difference in the alignment of the market. The market has become much stronger for the short pull, but there is much less guarantee of strength for the long pull.

In total volume, the buying has decreased. During May there was a much smaller volume of contracting for the far forward deliveries. There was in the case of many mills a decrease in the volume of specifications against contracts, and probably the total of all the mills would show a decrease.

At the same time there appeared a greater pressure for early deliveries, and prices for early deliveries moved upwards. Superficially there was in this respect an increase in the strength of the market, but single inquiries had to go the rounds before finding a seller, and frequently no seller was found at all. This made the appearance of heavy inquiry, but mills do not fill order books, or earn dividends, on inquiries that they refuse to consider.

The mill position is strengthened when actual orders, certain of completion, are entered. Inquiries turned away might be thought to strengthen the position, in that they may bank up and develop later, when the mill can

entertain them. That would, perhaps, be the case in ordinary times, but at this time it does not follow. Industry was wound up to a very high pitch when the United States entered the war. Gradually the activities of the rank and file of the people are shifting, and will continue to shift, from a peace to a war basis, and steel that a buyer could secure right now would go into the stream, but if he must wait six or nine months the stream may be so thinned that it will not carry it. Hence those who wish to buy are those who wish early deliveries. Those who are covered for a distance ahead do not wish to cover for a period farther ahead.

Buying Power.

This is only a rough comparison, but the precise truth would be very complicated, and this is close enough to be interesting and more or less illuminating. Seven months ago, or on November 1, 1916, the mills were supposed to be sold up for an average of eight months, which would carry them through the present month. At that date our **composite finished steel** stood at 3.085c. At this writing, early in June, it has reached a landmark, 5.00c. The advance is \$38 a net ton. Now, generally speaking, if people pay present prices they pay \$38 a ton more than when, broadly speaking, the steel now being shipped and paid for was placed under contract. The present output of finished rolled steel is about 3,000,000 net tons a month. Of course it is not all subject to this price advance. There is Government steel, steel on long term contracts, standard rails, not included in our composite, but at the same time not purchaseable at present. Applied to the whole 3,000,000 tons the advance would be more than \$100,000,000 on each month's steel. Could the people afford to pay so much more for their steel than they are paying now?

The Common Activities.

It has been a notable fact throughout this steel movement of a couple years that while the volume of strictly domestic buying and consumption, deducting all exports direct and indi-

rect, has been greater than at any previous time, the proportion of steel going into large investments, outside of ships, has been much smaller than usual. There has been less rail, car and locomotive buying than in 1912 or 1909, much less than in 1906, and the erection of bridges and buildings has been far below the rate of previous active times. The market has been supported by the ordinary activities of the people, who have been active in a remarkable degree, buying automobiles, machinery, implements, all sorts of things. Now we are likely to have a practical cessation of all building activities, while the people are likely, as they get more and more into the war atmosphere, to do less and less.

The War Demand.

To act as an offset to such decreases as are certain to come, there is the war demand for steel. As we see things now the total demand is going to be greater than was expected one month or two months ago, if all goes well. The authorities at Washington and the numberless committees aiding them are doing their best, without doubt, and that

is all that anyone expects. There is no precise line to which they are striving to build. It is not a precise number of ships, nor a precise amount of freight movement, nor a precise number of shells, or of tons of shell steel for our Allies, it is all we can do. We do not know what that will be. It would be well to have millions of vessel tonnage in addition, to ship abroad thousands of locomotives, and tens of thousands of freight cars, with shells or shell steel equal to hundreds of thousands of tons a month. It would be well to place on our own rails many locomotives and cars, to build tens of thousands of automobile trucks, and so on.

Now, what is it that really will be done? We muster all our forces for the prosecution of the war. The answer to many questions that one would desire to be answered at this time lies not in the steel mill but beyond it, in the factories that fabricate steel, work it up into the usual forms, whether wares for peace or munitions of war, and also with the people not directly working in those factories. The Gov-

Pig Iron Prices.

(Averaged from daily quotations; at Philadelphia, Buffalo, Cleveland and Chicago, prices are delivered.

	Bessemer.	Basic.	No. 2 fdy.	Basic.	No 2 X fdy.	Cleve-	No. 2 fdy.	Ferro-	Fur-		
	Valley		Phila.	Phila.	Buffalo.	land.	Chi-	mangan-	nace		
							cago.	ingham.	ese.*		
1916											
Jan. ..	21.00	18.00	18.50	19.24	19.71	18.25	18.80	19.00	14.92	115.40	3.14
Feb. ..	20.50	17.88	18.50	19.50	19.75	18.25	18.80	19.00	14.64	139.00	3.41
Mar. ..	20.67	18.48	18.50	19.60	19.77	18.77	18.86	19.24	15.00	175.00†	3.45
April ..	21.00	18.48	18.50	20.50	20.20	19.25	19.00	19.50	15.00	175.00	2.45
May ..	21.00	18.21	18.44	20.50	20.25	19.15	19.08	19.50	15.00	175.00	2.44
June ..	21.00	18.25	18.39	19.90	20.04	18.75	19.00	19.50	14.63	175.00	2.54
July ..	21.00	18.00	18.25	19.15	19.75	18.75	18.80	19.50	14.00	175.00	2.65
Aug. ..	21.00	18.00	18.27	19.00	19.58	18.75	18.87	19.17	14.00	175.00	2.75
Sept. ..	21.32	18.27	18.58	19.50	19.50	19.04	18.67	18.75	14.38	165.00	2.94
Oct. ..	23.81	20.17	20.56	20.52	20.58	20.48	19.87	19.79	15.35	165.00	5.69
Nov. ..	29.40	24.80	25.60	24.68	25.00	27.41	24.58	25.70	19.72	165.00	6.91
Dec. ..	34.84	29.84	29.84	29.84	30.27	33.81	30.48	29.34	23.38	170.00	9.00
Year ..	23.05	19.87	20.16	19.96	21.20	20.67	20.40	20.67	15.84	164.12	3.94
1917.											
Jan. ..	35.00	30.00	30.00	30.00	31.48	35.25	30.95	30.50	24.27	175.00	9.24
Feb. ..	35.00	30.00	30.00	30.45	31.96	35.25	31.78	31.42	24.13	210.00	10.57
Mar. ..	36.70	31.93	34.96	33.93	37.01	35.81	32.21	33.65	29.67	270.00	9.78
April ..	41.36	38.92	39.16	39.40	41.75	40.09	39.30	39.34	35.76	325.00	8.00
May ..	44.92	41.46	42.65	40.75	43.67	47.75	41.49	41.15	36.92	400.00	8.40

Domestic, delivered. x Prompt for Connellsville

ernment goes first to the steel mills. "Can you furnish steel?" and the steel mills answer, "You can have all we can make." Buy as much as is necessary, deliveries to other customers will be delayed. This has occurred. What is to occur is the placing of orders with factories that work up steel. In many instances they simply change their product, which may involve their putting a less tonnage of steel through per month, or a larger tonnage. Some will have trouble getting started. Others will have such long runs on a given thing that they will be able to work up more steel.

No estimate can possibly be made of the volume of Government steel requirements. Any attempt would have to be in rates per month, rather than in total tonnage. We shall not be through prosecuting war until war is ended. Each month it will be possible to fabricate more steel for war use. While a couple months ago 20% of the steel output was considered altogether an outside estimate we think, if all goes well the percentage may be made higher. Suppose that, all told, it will be 30 or 35%, for ourselves and our allies.

It was 20 or 25%, in exports, before. The peace consumption of steel in the United States would drop from 75 or 80% to 65 or 70%. The people may or may not wish to decrease their consumption by a greater amount than that.

Pig Iron.

Dropping from speculation to cold, hard facts, Bessemer pig iron sold in the closing days of May at \$50, valley, and basic at \$45, record prices for both commodities, as the last time pig iron was as high as at present there was neither Bessemer nor basic iron; it was foundry and forge only. Heavy melting steel scrap has sold at \$35 to \$38, delivered Pittsburgh. During the first half of 1915 steel prices advanced while pig iron wavered. Every time it appeared that pig iron would advance some more furnaces came in, and by accumulating their "backlog," prevented an advance. Then a moderate advance occurred, while during the fore part of 1916 the pig iron market was stationary, unfinished and finished steel advancing all the while. On September 1, 1916, the position was that pig iron had advanced about \$5.50, but billets

Finished Steel Prices.

(Averaged from daily quotations, f.o.b. Pittsburgh.)

						Grooved			Sheets			Comp.
	Shapes	Plates.	Bars.	Pipe.	Wire.	Wire Nails.	Steel Skelp.	Black.	Galv.	Blue Annld.	Tin plate.	Fin. steel.
1916												
January	1.87	1.90	1.87	76¾	1.98	2.13	1.75	2.60	4.75	2.55	3.75	2.1410
February ...	2.06	2.16	2.06	75½	2.11	2.26	1.94	2.60	4.80	2.65	3.83	2.2988
March	2.36	2.53	2.36	73¾	2.25	2.40	2.24	2.73	4.93	2.85	4.20	2.5579
April	2.50	2.75	2.50	71½	2.25	2.40	2.35	2.89	5.00	2.95	4.70	2.7166
May	2.50	2.83	2.50	70	2.45	2.50	2.35	2.90	5.00	3.00	5.46	2.8043
June	2.50	2.90	2.50	70	2.45	2.50	2.35	2.90	4.80	3.00	5.75	2.8300
July	2.50	2.90	2.50	70	2.45	2.50	2.35	2.90	4.40	2.90	6.00	2.8425
August	2.54	2.94	2.56	70	2.53	2.58	2.35	2.90	4.20	2.90	5.54	2.8588
September ..	2.60	3.00	2.60	69¾	2.55	2.60	2.35	2.91	4.20	2.90	5.75	2.9013
October ...	2.63	3.07	2.62	69	2.59	2.64	2.40	3.23	4.50	3.15	5.77	2.9747
November .	2.86	3.33	2.76	68½	2.79	2.84	2.75	3.72	5.34	3.66	6.40	3.2036
December ..	3.03	3.53	2.93	66	2.95	3.00	2.85	4.40	6.27	3.65	7.18	3.4679
Year	2.50	2.82	2.48	70¾	2.45	2.53	2.34	3.06	4.85	2.99	5.34	2.8009
1917.												
January	3.11	3.61	3.00	64	2.95	3.00	2.85	4.50	6.50	4.25	7.23	3.5249
February ...	3.25	3.75	3.00	62¾	2.95	3.00	2.85	4.63	6.75	4.50	7.83	3.6529
March	3.52	4.33	3.27	60¼	3.13	3.18	3.50	4.90	7.00	4.70	8.00	3.9454
April	3.70	4.50	3.39	55	3.23	3.28	3.50	5.88	7.40	5.40	7.60	4.1196
May	4.00	4.50	3.64	49	3.45	3.50	3.75	6.73	9.00	6.70	8.00	4.5272

\$28 and finished steel products \$29. There had been plenty of pig iron for making steel, and plenty of rolling capacity to finish the steel once made. Stocks of pig iron were being consumed. Since that date the stocks have become exhausted, steel making capacity has been greatly increased, and there has been scarcely any increase in pig iron producing capacity. Scrap, moreover, has been in scant supply. The character of the present activities is such that not much scrap is being produced. There are few bridges and buildings being torn down, the railroads are wrecking little equipment, the structural and car shops are not working full. The rolling of shell steel, with its

heavy discards, has greatly decreased.

There is ample evidence in these things that while the thin neck of the bottle until recently has been the steel making departments, the distinction now passes to the blast furnace. It looks very much as if, for months to come, the production of steel will be regulated, not by the capacity of the steel making departments, but by the amount of pig iron and scrap they can secure. Some steel mills may be forced to curtail output. Surely before any does so it will pay for pig iron or scrap the value of steel minus the cost of conversion, which long ago was \$5 a ton, into billets, and may be two or three times that now, it does not matter.

U. S. Steel Corporation's Operations.

Earnings and Unfilled Orders.

Earnings by Quarters.

Net earnings by quarters since 1911:

Quarter.	1917.	1916.	1915.
1st	\$113,121,018	\$60,713,624	\$12,457,809
2nd		81,126,048	27,950,055
3rd		85,817,067	38,710,644
4th		105,968,347	51,277,504
Year ...		333,625,086	130,396,012
	1914.	1913.	1912.
1st	\$17,994,382	\$34,426,802	\$17,826,973
2nd	20,457,596	41,219,813	25,102,266
3rd	22,276,002	38,450,400	30,063,512
4th	10,935,635	23,084,330	35,181,922
Year	71,663,615	137,181,345	108,174,673

Unfilled Orders.

(At end of the Quarter.)

	First.	Second.	Third.	Fourth.
1904 ..	4,136,961	3,192,277	3,027,436	4,696,203
1905 ..	5,579,560	4,829,655	5,865,377	7,605,086
1906 ..	7,018,712	6,809,584	7,936,884	4,489,718
1907 ..	8,043,858	7,603,878	6,425,008	4,642,553
1908 ..	3,765,343	3,313,876	3,421,977	3,603,527
1909 ..	3,542,590	4,057,939	4,796,833	5,927,031
1910 ..	5,402,514	4,237,794	3,158,106	2,674,757
1911 ..	3,447,301	3,361,058	3,611,317	5,084,761
1912 ..	5,304,841	5,807,346	6,551,507	7,932,164
1913 ..	7,468,956	5,807,317	5,003,785	4,282,108
1914 ..	4,654,825	4,032,857	3,787,667	3,836,643
1915 ..	4,253,749	4,678,196	5,317,608	7,805,220
1916 ..	9,331,001	9,640,458	9,522,584	11,547,286
1917 ..	11,717,644			

Bookings and Shipments.

In this table, first two columns, percentages of bookings and shipments to total capacity, our own estimates, while last column is derived from official reports of "unfilled tonnage" while third percentage column is directly computed from this tonnage column.

	Ship- ments.	Book- ings.	Dif- ference.	Dif- ference.
	%	%	%	Tons.
1915—				
May	76	85	- 9	-102,754
June	79	113	+34	+418,598
July	83	104	+21	+250,344
August	91	89	- 2	- 20,085
September ..	98	133	+35	+409,163
October	103	172	+69	+847,834
November ...	102	186	+84	+1,024,037
December ...	102	152	-50	-615,731
1916—				
January ...	102	112	+10	+116,547
February ...	102	157	+55	+646,199
March	104	164	+60	+762,035
April	104	146	+42	+498,550
May	104	82	-22	-297,340
June	104	82	-22	-297,340
July	90	86	- 4	- 46,866
September ...	96	87	- 9	-137,773
October	106	145	+39	+492,676
November ...	104	189	+85	+1,043,282
December ...	96	136	+40	+488,744
1917—				
January ...	92	86	- 6	- 73,232
February ...	92	101	+ 9	+102,643
March	97	107	+10	+134,947
April	99	127	+28	+471,480
May	98	75	-23	-296,492
Total unfilled obligations, May 31, 1917, 11,886,591 tons.				

To the vertically integrated concern there may be some changes in the book-keeping. To the merchant furnace and the detached steel works it will make all the difference in the world. Pig iron and scrap may easily have still greater advances before them, even without any further advance in unfinished or finished steel.

Tin Plate Movement.

United States imports and exports of tin plate in gross tons have been as follows, the imports of course including those for drawback purposes:

	Imports.	Exports.
1906	56,983	12,082
1907	57,773	10,293
1908	58,490	11,878
1909	62,592	9,327
1910	66,640	12,459
1911	14,098	61,466
1912	2,053	81,694
1913	20,680	57,812
1914	15,411	59,549
1915	2,350	154,642
1916	1,008	227,391
January, 1915	1,608	7,014
February	265	5,834
March	53	10,500
April	44	9,084
May	24	7,218
June	75	7,582
July	71	13,895
August	50	21,939
September	31	22,271
October	15	17,018
November	54	15,538
December	61	13,972
January, 1916	62	12,178
February	107	13,534
March	44	20,563
April	179	21,385
May	39	25,585
June	91	29,751
July	150	18,760
August	105	18,757
September	51	18,770
October	111	14,195
November	38	15,816
December	34	18,229
January, 1917	31	23,408
February	35	14,632
March	21	21,680

Car and Locomotive Buying.

Freight Cars Ordered.

1915: Domestic	105,000	
Export	20,000	
Total, 1915		125,000
1916: Domestic	165,000	
Export	29,000	
Total, 1916		194,000
1917: Domestic	16,000	
Export	28,500	
January		16,840
February		19,566
March		9,687
April		1,772
May		1,778

Locomotives Ordered.

1915: Domestic	1,500	
Export	800	
Total, 1915		2,300
1916: Domestic	2,850	
Export	2,900	
Total, 1916		5,750
1917: Domestic	1,861	
Export	1,090	
January		807
February		299
March		232
April		339
May		1,276

STRUCTURAL STEEL LETTINGS

Reports of the Bridge Builders' and Structural Society, lettings of structural steel contracts by months in percentage of the fabricating capacity, capacity being now about 180,000 tons a month.

	1914.	1915.	1916.	1917.
January	62	25	60	61½
February	63	30	75	59
March	76	64	102	68
April	88	62½	72½	61
May	57	61	80	
June	56½	80	58	
July	68	86	47½	
August	27½	85	64	
September	38½	67	52½	
October	35	78	77	
November	20	105	78	
December	35	121	86	
Average	52½	72	71¾	

The Titan Motors Corporation, Detroit, has been organized with a capital stock of \$350,000. The stockholders are Carl C. Kinkley, A. A. Gloetzner and Louis Mendelsohn.

Railroad Earnings.

Railroad earnings per mile of road, having annual operating revenues above \$1,000,000, this being about 230,000 miles or about 90% of the total steam railway mileage; compiled by the Bureau of Railway Economics from reports furnished the Interstate Commerce Commission.

	1912-14			1914-15			1915-16		
	Revenue.	Expense.	Net.	Revenue.	Expense.	Net.	Revenue.	Expenses.	Net.
July	\$1,183	\$837	\$346	\$1,127	\$786	\$341	\$1,130	\$750	\$380
August ..	1,244	856	388	1,174	788	386	1,190	764	426
September	1,257	854	403	1,185	783	402	1,251	774	477
October ..	1,314	891	423	1,171	787	384	1,323	815	508
November	1,180	884	337	1,026	734	292	1,303	801	502
December.	1,116	821	296	993	730	263	1,253	802	451
January ..	1,021	795	226	939	718	221	1,133	798	335
February ..	914	746	168	900	680	220	1,141	801	340
March	1,091	801	290	1,015	722	293	1,260	844	416
April	1,038	782	256	1,013	724	289	1,223	827	396
May	1,047	800	247	1,044	735	309	1,307	857	450
June	1,097	789	308	1,094	732	362	1,302	851	451
Fiscal year	13,483	9,801	3,682	12,678	8,915	3,763	14,818	9,684	5,134

	1916-17		
	Revenue.	Expenses.	Net.
September	1,409	881	528
October ..	1,466	910	556
November	1,396	894	502
December	1,345	905	440
January ..	1,301	930	371
February ..	1,147	899	248
March ...	1,373	992	381

Wage Scale Averages.

Sworn averages of prices obtained by mills for shipments in months named, used in fixing wages under Amalgamated Association sliding scales. Figures represent the rates used, the actual ascertained averages lying between the figure given and the one five points higher. Base size of iron bars; average of 26, 27, and 28 gauges black sheets; tin plate per base box, 100-pound.

Bar Iron.

	1914.	1915.	1916.	1917.
Jan.-Feb.	1.1590	1.024	1.40	2.35
Mar.-April	1.176	1.087	1.60	2.45
May-June	1.1257	1.10	1.85	
July-Aug.	1.0928	1.15	1.95	
Sept.-Oct.	1.0847	1.15	2.00	
Nov.-Dec.	1.037	1.30	2.15	
Year's av.	1.1125	1.144	1.83	

Sheets and Tin Plates.

	Sheets.		Tin Plates.	
	1916.	1917.	1916.	1917.
Jan.-Feb.	2.25	3.40	3.50	4.95
Mar.-April	2.50	3.90	3.70	5.75
May-June	2.60		3.90	
July-Aug.	2.70		4.07	
Sept.-Oct.	2.75		4.10	
Nov.-Dec.	2.80		4.25	
Year's av.	2.60		3.92	

Pig Iron Production.

Rates per annum, including charcoal pig.

January, 1916	37,850,000
February	39,200,000
March	39,600,000
April	39,600,000
May	39,800,000
June	39,500,000
July	38,350,000
August	39,200,000
September	39,300,000
October	41,700,000
November	40,700,000
December	37,700,000
January 1917	37,460,000
February	34,750,000
March	38,600,000
April	40,900,000
May	40,600,000
On June 1st	41,100,000

Actual production:

1910	27,302,567
1911	30,966,152
1914	23,332,244
1915	29,916,213
1916	39,434,797

Composite Steel.

Computation for June 1, 1917:

Pounds.	Group.	Price.	Extension.
20	Bars	3.75	93.75
15	Plates	4.50	6.750
15	Shapes	4.00	6.000
15	Pipe (34-3)	5.00	7.500
15	Wire nails	3.50	5.250
1	Sheets (28 lb.)	7.00	7.000
5	Tin plates	8.00	4.000
10 pounds			45.875
One pound			4.5875

Averaged from daily quotations:

	1913.	1914.	1915.	1916.	1917.
Jan.	1.7737	1.5394	1.4554	2.1410	3.553
Feb.	1.7625	1.5794	1.4716	2.2988	3.653
Mar.	1.7646	1.5638	1.5098	2.5579	3.945
April	1.7742	1.5337	1.5357	2.7165	4.196
May	1.7786	1.5078	1.5381	2.8043	4.527
June	1.7719	1.4750	1.5312	2.8300	
July	1.7600	1.4805	1.5692	2.8425	
Aug.	1.7400	1.5241	1.6059	2.8588	
Sept.	1.7093	1.5632	1.6506	2.9013	
Oct.	1.6779	1.5236	1.7264	2.9747	
Nov.	1.6203	1.4769	1.9089	3.2036	
Dec.	1.558	1.4324	2.0329	3.4679	
Year	1.7241	1.5182	1.6280	2.8009	

Scrap Iron and Steel Prices.

Melting Bundled No. 1 R. R. No. 1 No. 1 Heavy
Steel. Sheet Wrought Cast. Steel. Melt'g.
Pitts. Pitts. Pitts. Pitts. Phila. Ch'go.

1915—

Nov.	16.12	12.55	15.35	13.90	14.65	13.95
Dec.	17.65	13.15	17.10	14.95	15.60	15.25
Year	18.26	16.54	12.26	12.40	12.54	10.90

1916—

Jan.	17.75	13.40	18.00	15.10	16.30	15.60
Feb.	17.20	13.60	18.75	15.35	16.25	15.75
Mar.	18.40	14.80	19.15	15.75	17.15	16.75
Apr.	18.00	14.75	19.25	16.00	18.00	16.75
May	17.00	13.65	19.65	16.10	17.00	15.90
June	16.25	13.00	19.00	15.40	15.45	14.80
July	16.50	12.50	18.80	15.30	15.00	14.30
Aug.	16.25	11.70	18.15	15.00	15.00	15.30
Sep.	16.61	11.65	18.35	15.00	15.00	16.00
Oct.	18.25	11.65	19.30	15.80	15.65	17.35
Nov.	22.50	13.75	21.25	17.75	18.25	21.00
Dec.	25.50	16.00	27.20	21.40	23.95	23.65
Year	18.37	13.38	19.73	16.16	16.92	16.90

1917—

Jan.	23.50	16.25	23.75	20.75	22.75	23.50
Feb.	22.50	15.75	22.50	19.75	21.15	22.25
Mar.	24.00	16.25	26.00	22.00	23.00	24.30
Apr.	27.75	17.25	30.50	24.00	25.50	27.30
May	29.25	19.25	33.00	25.25	26.50	29.00

Composite Pig Iron.

Computation for June 1, 1917:

One ton Bessemer, valley	\$50.00
Two tons basic, valley (45.00)	90.00
One ton No. 2 foundry, valley	45.00
One ton No. 2 foundry, Philadelphia	44.75
One ton No. 2 foundry, Buffalo	45.25
One ton No. 2 foundry, Cleveland	44.30
One ton No. 2 foundry, Chicago	46.50
Two tons No. 2 Southern, foundry Cincinnati (40.90)	81.80
Total, ten tons	445.60
One ton	44.56

Averaged from daily quotations:

	1913.	1914.	1915.	1916.	1917.
Jan.	17.391	13.492	13.070	18.690	30.752
Feb.	17.140	13.721	13.079	18.564	30.946
Mar.	16.775	13.843	12.971	18.857	34.353
April	16.363	13.850	12.914	19.021	39.140
May	15.682	13.808	13.206	18.965	42.037
June	14.968	13.606	13.047	18.552	
July	14.578	13.520	13.125	18.585	
Aug.	14.565	13.516	14.082	18.514	
Sept.	14.692	13.503	14.895	18.697	
Oct.	14.737	13.267	15.213	20.192	
Nov.	14.282	13.047	16.398	25.243	
Dec.	13.838	13.073	17.987	30.082	
Year	15.418	13.520	14.150	20.306	

Unfinished Steel and Iron Bars.

(Averaged from daily quotations.)

Sheet
Billets. Bars. Rods. —Iron bars, deliv.—
Pitts. Pitts. Pitts. Phila. Pitts. Ch'go.

1915—

Dec.	30.73†	30.73†	39.50	1.99	1.83	1.69
Year	22.51	22.91	28.28	1.37	1.32	1.24

1916—

Jan.	32.50†	32.50†	42.00	2.24	2.02	1.79
Feb.	34.00†	34.00†	48.00	2.41	2.25	1.92
Mar.	41.00†	41.00†	56.00	2.56	2.40	2.17
Apr.	45.00	45.00	60.00	2.62	2.50	2.35
May	43.00	43.00	59.00	2.66	2.60	2.35
June	42.00†	42.00†	58.00	2.66	2.60	2.35
July	42.50†	42.50†	58.00	2.66	2.60	2.35
Aug.	46.00	46.00	58.00	2.66	2.60	2.35
Sep.	47.00	45.00	58.00	2.66	2.70	2.35
Oct.	48.00	48.00	59.00	2.66	2.75	2.35
Nov.	52.75	54.00	65.00	2.66	2.85	2.50
Dec.	56.96	56.96	70.00	3.02	3.19	2.89
Year	44.23	44.17	57.58	2.57	2.59	2.31

1917—

Jan.	63.50	63.50	75.00	3.16	3.25	3.00
Feb.	65.00	65.00	77.00	3.16	3.25	3.00
Mar.	68.00	68.00	79.00	3.41	3.46	3.00
Apr.	75.00	75.00	85.00	3.41	3.62	3.25
May	88.00	89.00	93.00	4.16	4.00	3.40

† Premium for open-hearth.

Price Changes of Iron and Steel Products From January 21, 1916 to Date.

Price changes in merchant bars, structural shapes, plates, wire nails, merchant pipe, sheets and tin plates are given below, with dates. These are the commodities used in compiling our **composite finished steel**. In some cases the dates named are those upon which prominent producers announced price changes, but more frequently the rates are merely those upon which our quotations were changed. A few other price changes are included.

1916—				1916—			
Jan. 21	Bars	1.85	to 1.90	Aug. 25	Galv. sheets	4.25	to 4.15
" 21	Plates	1.85	to 2.00	Sept. 7	Pipe	70%	to 69%
" 21	Shapes	1.85	to 1.90	" 7	Boiler tubes	56%	to 54%
" 21	Pipe	77%	to 76%	" 20	Galv. sheets	4.15	to 4.25
" 24	Wire nails	2.10	to 2.20	" 28	Sheets	2.90	to 3.00
Feb. 7	Bars	1.90	to 2.00	Oct. 3	Blue ann. sheets	2.90	to 3.00
" 7	Plates	2.00	to 2.10	" 3	Galv. sheets	4.25	to 4.30
" 7	Shapes	1.90	to 2.00	" 6	Sheets	3.00	to 3.10
" 14	Wire nails	2.20	to 2.30	" 7	Tin plate	5.50	to 6.00
" 15	Pipe	76%	to 75%	" 13	Sheets	3.10	to 3.25
" 21	Bars	2.00	to 2.25	" 13	Galv. sheets	4.30	to 4.40
" 21	Plates	2.10	to 2.35	" 13	Tin plate	6.00	to 5.75
" 21	Shapes	2.00	to 2.25	" 16	Galv. sheets	4.40	to 4.50
" 21	Tin plate	3.75	to 4.00	" 19	Wire nails	2.60	to 2.70
" 29	Pipe	75%	to 74%	" 20	Sheets	3.25	to 3.35
" 29	Boiler tubes	64%	to 63%	" 20	Blue ann. sheets	3.00	to 3.15
Mar. 1	Wire nails	2.30	to 2.40	" 24	Plates	3.00	to 3.25
" 8	Black sheets	2.60	to 2.75	" 25	Bars	2.60	to 2.70
" 8	Blue ann. sheets	2.65	to 2.90	" 25	Shapes	2.60	to 2.70
" 13	Bars	2.25	to 2.35	" 25	Grooved skelp	2.35	to 2.50
" 13	Plates	2.35	to 2.60	" 26	Sheets	3.35	to 3.40
" 13	Shapes	2.25	to 2.35	" 26	Galv. sheets	4.50	to 4.75
" 15	Steel pipe	74%	to 73%	" 27	Blue ann. sheets	3.15	to 3.30
" 15	Boiler tubes	68%	to 61%	" 30	Tin plate	5.75	to 6.00
" 23	Bars	2.35	to 2.50	" 31	Shapes	2.70	to 2.80
" 23	Shapes	2.35	to 2.50	Nov. 1	Boiler tubes	54%	to 52%
" 28	Plates	2.60	to 2.75	" 6	Wire nails	2.70	to 2.85
" 29	Sheets	2.75	to 2.85	" 8	Sheets	3.40	to 3.65
" 29	Steel pipe	73%	to 72%	" 15	Tin plate	6.00	to 6.25
" 29	Boiler tubes	61%	to 60%	" 15	Grooved skelp	2.50	to 2.60
April 5	Sheets	2.85	to 2.90	" 15	Pipe	69%	to 68%
" 15	Boiler tubes	60%	to 56%	" 18	Galv. sheets	5.00	to 5.50
" 19	Tin plate	4.50	to 5.00	" 20	Tin plate	6.25	to 7.00
" 24	Pipe	72%	to 70%	" 20	Sheets	3.65	to 4.00
May 1	Wire nails	2.40	to 2.50	" 21	Bars	2.70	to 2.90
" 3	Tin plates	5.00	to 5.50	" 21	Plates	3.25	to 3.50
" 16	Plates	2.75	to 2.90	" 21	Shapes	2.80	to 3.00
June 7	Galv. sheets	5.00	to 4.75	" 21	Blue ann. sheets	3.30	to 3.40
" 16	Tin plate	5.50	to 6.00	" 21	Boiler tubes	52%	to 46%
July 7	Blue ann. sheets	3.00	to 2.90	" 25	Grooved skelp	2.60	to 2.85
" 7	Galv. sheets	4.75	to 4.50	" 27	Blue ann. sheets	3.40	to 3.50
Aug. 1	Tin plate	6.00	to 5.50	" 27	Galv. sheets	5.50	to 5.75
" 7	Wire nails	2.50	to 2.60	" 27	Wire nails	2.85	to 3.00
" 15	Bars	2.50	to 2.60	Dec. 4	Pipe	68%	to 66%
" 18	Shapes	2.50	to 2.60	" 4	Sheets	4.00	to 4.25
" 18	Plates	2.90	to 3.00				

1916—

Dec. 5	Galv. sheets	5.75	to 6.00
" 6	Blue ann. sheets	3.50	to 3.65
" 11	Sheets	4.25	to 4.50
" 11	Galv. sheets	6.00	to 6.25
" 20	Tin plate	7.00	to 7.50
" 21	Bars	2.90	to 3.00
" 21	Shapes	3.00	to 3.10
" 21	Plates	3.50	to 3.60
" 26	Blue ann. sheets	3.75	to 4.00
" 30	Pipe	64% to 64%	

1917—

Jan. 10	Galv. sheets	6.25	to 6.50
" 10	Blue ann. sheets	4.00	to 4.25
" 16	Tin plate	7.00	to 7.50
" 30	Shapes	3.10	to 3.25
" 30	Plates	3.60	to 3.75
Feb. 6	Tin plate	7.00	to 8.00
" 14	Pipe	64% to 64%	
" 15	Sheets	4.50	to 4.75
" 16	Blue ann. sheets	4.25	to 4.50
Mar. 5	Pipe	62% to 60%	
" 5	Wire nails	3.00	to 3.20
" 8	Bars	3.00	to 3.35
" 8	Plates	3.75	to 4.50
" 8	Shapes	3.25	to 3.60
" 14	Sheets	4.75	to 5.00
" 14	Galv. sheets	6.50	to 6.75
" 20	Blue ann. sheets	4.50	to 4.75
" 20	Galv. sheets	6.75	to 7.00
Apr. 2	Tin plate	8.00	to 7.50
" 2	Pipe	60% to 55%	
" 3	Sheets	5.00	to 5.50
" 3	Blue ann. sheets	4.75	to 5.00
" 3	Galv. sheets	6.75	to 7.00
" 18	Sheets	5.50	to 6.00
" 18	Blue ann. sheets	5.00	to 5.50
" 18	Galv. sheets	7.00	to 7.50
" 20	Sheets	6.00	to 6.50
" 20	Blue ann. sheets	5.50	to 6.00
" 20	Galv. sheets	7.50	to 8.00
" 23	Wire nails	3.20	to 3.50
" 24	Bars	3.35	to 3.50
" 24	Shapes	3.60	to 4.00
" 25	Tin plate	7.50	to 8.00
May 1	Galv. sheets	8.00	to 9.00
" 1	Pipe	55% to 49%	
" 14	Bars	3.50	to 3.75
" 14	Plates	4.50	to 5.50
" 17	Sheets	6.50	to 7.00
" 17	Blue ann. sheets	6.00	to 6.50
" 18	Galv. sheets	8.00	to 8.50
" 18	Blue ann. sheets	6.50	to 7.00
" 18	Galv. sheets	8.50	to 9.25
June 7	Plates	5.50	to 7.00
" 8	Shapes	4.00	to 4.25
" 8	Galv. sheets	9.25	to 9.50

Steel Making Pig Iron Averages.

Bessemer and basic pig iron averages, compiled by Messrs. W. P. Snyder & Company from sales in the valley market of 1,000 tons and over.

	Bessemer.		Basic.	
	1916.	1917.	1916.	1917.
Jan. ..	\$20.645	\$25.00	\$17.833	\$20.00
Feb. ..	20.2136	35.418	17.984	30.00
Mar. ..	20.8625	36.423	18.25	32.537
April ..	20.70	41.332	18.00	37.996
May ..	20.833	45.9917	18.1607	41.8947
June ..	21.00		18.00	
July ..	21.00		18.00	
Aug. ..	21.00		18.00	
Sept. ..	21.9346		18.63	
Oct. ..	23.6576		20.3086	
Nov. ..	29.12		27.229	
Dec. ..	34.213		30.00	
Year ..	22.9316		20.0329	

Above prices are f. o. b. valley furnace; delivered Pittsburgh is 95 cents higher.

British Iron And Steel Exports.

	Pig Iron.	Rails.	Tin Plate.	Totals.*
1912 ..	1,262,383	407,175	481,123	4,933,112
1913 ..	1,124,181	500,117	494,497	5,049,090
1914 ..	780,763	433,507	455,392	3,672,348
1915 ..	611,227	242,267	368,778	3,248,046
1916 ..	917,396	50,275	321,710	3,357,829
1916—				
Jan. ..	78,271	3,151	26,271	292,203
Feb. ..	84,351	3,905	27,289	285,250
Mar. ..	87,283	3,366	39,482	307,488
April ..	82,976	10,510	23,337	293,897
May ..	97,967	4,103	41,868	395,750
June ..	77,487	3,243	30,351	310,595
July ..	69,999	3,485	38,174	298,929
Aug. ..	95,655	1,983	34,124	319,928
Sept. ..	72,683	2,712	19,226	231,335
Oct. ..	72,187	6,929	10,929	241,261
Nov. ..	49,986	16,411	4,571	224,554
Dec. ..	48,542	2,317	14,248	158,609
1917—				
Jan. ..	61,201	5,935	16,515	210,124
Feb. ..	59,970	851	11,069	186,308
Mar. ..	79,694	6,084	38,957	239,965
April ..	57,738	2,659	16,863	180,869

* Includes scrap, pig iron, rolled iron and steel, cast and wrought iron manufactures, bolts, nuts, etc., but not finished machinery, boilers, tools, etc.

Iron and Steel Imports and Exports.

Value of Tonnage and Non-Tonnage.

	1912.	1913.	1914.	1915.	1916.	1917.
January	\$18,451,914	\$25,141,409	\$16,706,836	\$18,053,421	\$51,643,807	\$108,423,640
February	21,801,570	24,089,871	16,520,260	16,470,751	54,145,496	85,117,010
March	24,474,799	27,221,210	20,551,137	20,985,505	58,266,141	111,164,876
April	26,789,853	27,123,044	20,639,569	25,302,649	58,722,411	
May	28,050,247	26,718,970	19,734,045	26,536,612	72,918,913	
June	24,795,802	25,228,346	18,927,958	31,730,132	76,257,844	
July	24,917,952	24,170,704	16,737,552	35,892,106	70,745,162	
August	25,450,107	23,947,440	10,428,817	37,726,657	86,296,703	
September ...	23,286,040	22,831,082	12,531,102	38,522,175	90,895,592	
October	25,271,559	25,193,887	16,455,832	43,299,457	82,010,972	
November	26,406,425	20,142,141	15,689,401	48,056,220	77,570,840	
December	23,750,864	22,115,701	14,939,613	45,825,147	88,536,958	

Totals \$389,128,420 \$293,934,160 \$199,861,684 \$388,400,832 \$567,323,044 \$304,705,526

Exports of Tonnage Lines,---Gross Tons.

	1910.	1911.	1912.	1913.	1914.	1915.	1916.	1917.
January	118,681	152,362	151,575	249,493	118,770	140,550	357,122	608,286
February	110,224	150,919	204,969	241,888	121,206	139,946	368,981	449,107
March	124,980	216,360	218,219	257,519	159,998	174,104	438,656	606,563
April	117,921	228,149	267,313	259,689	161,952	223,587	384,924	
May	135,506	178,589	307,656	242,353	139,107	263,113	540,549	
June	120,601	174,247	273,188	243,108	144,539	356,431	526,772	
July	127,578	162,855	272,778	237,159	114,790	380,336	503,685	
August	131,391	177,902	282,645	209,856	86,599	405,952	597,750	
September	119,155	181,150	248,613	213,057	96,476	382,118	643,767	
October	129,828	186,457	251,411	220,550	147,293	349,848	610,125	
November	155,138	187,554	233,342	175,961	140,731	362,766	554,859	
December	150,102	190,854	235,959	181,715	117,827	353,856	580,961	

Totals 1,540,895 2,187,724 2,947,596 2,745,635 1,549,554 3,532,606 6,110,790 1,663,956

Iron Ore Imports.

	1914.	1915.	1916.	1917.
Jan. ..	101,804	75,286	89,844	97,440
Feb. .	112,574	78,773	94,315	86,314
Mar. .	68,549	88,402	93,383	95,989
April .	111,812	91,561	75,712	
May .	125,659	98,974	148,599	
June .	188,647	118,575	134,154	
July .	141,838	119,468	156,755	
Aug. .	134,913	126,806	127,094	
Sept. .	109,176	173,253	109,747	
Oct. .	114,341	138,318	95,833	
Nov. .	90,222	113,544	82,257	
Dec. .	51,053	118,321	118,043	

Totals 1,350,588 1,341,281 1,325,536 379,743

Iron and Steel Imports.

	1913.	1914.	1915.	1916.	1917.
Jan. .	21,740	17,776	10,568	15,824	39,991
Feb. .	25,505	14,757	7,506	20,279	24,380
Mar. .	27,467	27,329	8,025	15,159	37,280
April .	25,742	30,583	16,565	20,175	
May .	28,728	28,173	28,916	32,113	
June .	36,597	23,076	32,200	26,886	
July .	36,694	25,282	20,858	14,774	
Aug. .	18,740	28,768	27,557	32,257	
Sept. .	19,941	38,420	23,344	25,558	
Oct. .	20,840	22,754	34,319	30,170	
Nov. .	25,809	24,165	36,931	42,544	
Dec. .	26,454	9,493	35,409	44,133	

Total 317,260 289,778 282,443 275,743 101,671

Immigration Statistics.

Years mentioned refer to fiscal years ended June 30th. Aliens admitted include immigrant and non-immigrant, aliens departed include emigrant and non-emigrant.

Excess Arrivals Over Departures.

	Aliens.	Citizens.	Total.
1915	815,303	*61,098	754,205
1916	769,276	*82,211	687,065
1915	50,070	67,167	117,237
1916	125,941	11,197	137,138

July, 1915	11,082	3,912	14,994
August	*14,324	804	*15,128
September	*13,965	866	*14,831
October	4,877	662	5,539
November	3,292	*802	4,094
December	*570	*891	*1,461
January, 1916	7,306	*1,212	8,518
February	10,410	*1,826	12,236
March	26,791	4,198	30,989
April	26,146	4,471	30,617
May	24,708	2,921	27,629
June	22,184	65	22,249

July	18,244	3,604	21,848
August	21,413	304	21,717
September	29,310	1,441	30,751
October	28,339	*2,012	30,351
November	24,241	*186	24,427
December	18,791	*252	19,043
January, 1917	19,563	*1,790	21,353
February	14,145	*1,612	15,757
March	14,125	2,591	16,716
April	18,821	4,709	23,530
Ten months..	207,392	6,802	214,194

April, 1917.

Immigrant aliens in	20,523
Non-immigrants in	5,406
Total aliens in	25,929

Emigrant aliens out	2,777
Non-emigrant aliens out	4,381
Total aliens out	7,158

Citizens in	10,921
Citizens out	6,212
Excess citizens in	4,709

Change in population:

Aliens	+18,821
Citizens	+ 4,709
Net change	+23,530

* Excess of departures.

Our Foreign Trade.

Value of merchandise imports and exports and favorable trade balance, calendar years.

	Imports.	Exports.	Balance.
1906	1,320,501,572	1,798,243,434	477,741,862
1907	1,423,169,820	1,923,426,205	500,256,385
1908	1,116,374,087	1,752,835,447	636,461,360
1909	1,475,520,724	1,728,198,645	252,677,921
1910	1,562,904,151	1,866,258,904	303,354,753
1911	1,532,359,160	2,092,526,746	560,167,586
1912	1,818,133,355	2,399,217,993	581,084,638
1913	1,792,596,480	2,484,018,292	691,421,812
1914	1,789,276,001	2,113,624,050	324,348,049
1915	1,778,596,695	3,554,670,847	1,776,074,152
1916	*2,391,654,335	*5,481,423,589	*3,089,769,254

1914—

May	164,281,515	161,732,619	†2,548,896
June	157,529,450	157,072,044	†457,406
July	150,677,291	154,138,947	†5,538,344
Aug.	129,767,890	110,367,494	†19,400,396
Sept.	139,710,611	156,052,333	16,341,722
Oct.	137,978,778	195,283,852	57,305,074
Nov.	126,467,062	205,878,333	79,411,271
Dec.	114,656,545	245,632,558	130,976,013

1915—

Jan.	122,148,317	267,879,313	145,730,996
Feb.	125,123,391	298,727,757	173,604,366
Mar.	158,022,016	296,501,852	138,479,836
Apr.	160,576,106	294,745,913	134,169,807
May	142,284,851	273,769,093	131,484,242
June	157,695,140	268,547,416	110,852,276
July	143,099,620	267,978,990	124,879,370
Aug.	141,830,202	261,025,230	119,195,028
Sept.	151,236,026	300,676,822	149,440,796
Oct.	149,172,729	336,452,009	186,979,289
Nov.	155,496,675	327,670,353	172,173,678
Dec.	171,832,505	359,306,492	187,473,987

1916—

Jan.	184,350,942	330,036,410	145,685,468
Feb.	193,935,117	402,991,118	209,056,001
Mar.	213,589,785	410,742,034	197,152,249
Apr.	217,705,397	399,861,157	182,155,760
May	229,188,957	474,881,255	245,692,298
June	245,795,438	464,784,318	218,988,880
July	182,722,938	445,472,000	262,749,062
Aug.	199,247,391	509,778,680	310,531,289
Sept.	164,038,614	515,007,408	350,968,794
Oct.	178,658,730	492,813,918	314,155,188
Nov.	176,988,305	516,976,359	339,988,054
Dec.	204,834,188	521,650,904	316,816,716

1917—

Jan.	241,707,282	*613,555,693	*371,848,411
Feb.	199,479,996	467,683,406	268,203,410
Mar.	*270,218,139	553,988,270	283,770,130
Apr.	254,000,000	520,000,000	266,000,000

* High record. † Balance unfavorable.

Comparison of Metal Prices.

	Range for 1915		Range for 1916		Range for 1917		Closing, May 31, 1917.
	High.	Low.	High.	Low	High.	Low.	
Pig Iron							
Bessemer, valley	21.00	13.60	35.00	20.00	50.00	35.00	50.00
Basic, valley	18.00	12.50	30.00	17.75	45.00	30.00	45.00
No. 2 foundry, valley	18.50	12.50	30.00	18.25	43.00	30.00	43.00
No. 2X fdy. Philadelphia.	19.50	14.00	30.75	19.50	44.75	30.75	44.75
No. 2 foundry, Cleveland .	18.80	13.00	30.95	18.50	44.30	30.95	44.30
No. 2X foundry, Buffalo.	18.00	11.75	35.00	18.00	45.00	35.00	45.00
No. 2 foundry, Chicago ..	18.50	13.00	30.00	18.00	46.00	30.00	46.00
No. 2 South'n Birmingham	14.50	9.25	25.00	14.00	38.00	24.00	38.00
Scrap Iron and Steel.							
Melting steel, Pittsburgh.	18.00	11.00	27.00	16.00	32.00	22.00	32.00
Heavy steel scrap, Phila. ..	16.25	9.50	24.50	14.75	27.00	20.50	27.00
Heavy melt. steel, Chicago	15.25	8.75	24.00	14.50	32.00	21.50	31.50
No. 1 R. R. wrought, Pitts.	17.25	10.75	29.00	17.50	35.00	19.50	34.50
No. 1 cast, Pittsburgh	15.00	11.00	23.50	14.75	26.00	19.75	25.50
Iron and Steel Products.							
Bessemer rails, mill	28.00	28.00	38.00	28.00	38.00	38.00	38.00
Iron bars, Pittsburgh	1.90	1.20	3.25	1.90	4.00	3.25	4.00
Iron bars, Philadelphia ...	2.06	1.12½	3.16	2.06	4.16	3.16	4.16
Steel bars, Pittsburgh	1.80	1.10	3.00	1.85	3.75	3.00	3.75
Tank plates, Pittsburgh ..	1.60	1.10	3.60	1.85	7.00	3.50	7.00
Structural shapes, Pitts. ..	1.80	1.10	3.10	1.85	4.00	3.10	4.00
Grooved steel skelp, Pitts..	1.75	1.12½	2.85	1.75	4.00	2.85	4.00
Black sheets, Pittsburgh ..	2.60	1.70	4.50	2.60	7.50	4.50	7.25
Galv. sheets, Pittsburgh ..	5.00	2.65	6.50	4.15	10.00	6.25	9.75
Tin plate, Pittsburgh	3.60	3.10	7.50	3.75	8.50	7.00	8.25
Wire nails, Pittsburgh	2.10	1.50	3.00	2.10	3.50	3.00	3.50
Steel pipe, Pittsburgh	79%	81%	64%	78%	49%	64%	49%
Connellsville Coke at ovens.							
Prompt furnace	3.50	1.50	12.00	2.50	13.00	8.00	9.50
Prompt foundry	3.75	2.00	12.00	3.25	15.00	10.00	10.50
Metals—New York.							
Straits tin	57.00	32.00	56.00	37.50	66.50	42.50	64.00
Lake copper	23.00	13.00	36.00	23.00	37.00	27.75	32.75
Electrolytic copper	23.00	12.80	36.00	23.00	37.00	27.75	32.75
Casting copper	22.00	12.70	34.00	22.00	34.00	26.50	30.75
Sheet copper	27.25	18.75	42.00	28.00	44.00	40.00	40.00
Lead (Trust price)	7.00	3.70	7.50	5.50	10.00	7.50	10.00
Spelter	27.25	5.70	21.17½	8.37½	11.05	8.92½	9.61½
Chinese & Jap. antimony.	40.00	13.00	45.00	10.50	36.00	14.25	23.00
Aluminum, 98-99%	60.00	18.75	67.00	53.00	64.00	56.00	60.00
Silver	56½	46½	77½	55½	79	71½	74½
St. Louis.							
Lead	7.50	3.50	8.25	5.45	11.50	7.30	11.37½
Spelter	27.00	5.55	21.00	8.20	10.87½	8.75	9.43½
Sheet zinc (f.o.b. smelter)	33.00	9.00	25.50	15.00	21.00	19.00	19.00
London							
Standard tin, prompts	190	148½	205	161½	256½	180½	253½
Standard copper, prompts	86¾	57½	153	84	146	130	130
Lead	30¼	18¼	36½	27¾	30½	30½	30½
Spelter	110	28½	110	44	55	45½	54
Silver	27¼d	22¾d	7½	26½d	87½d	75½d	88d

Comparison of Security Prices.

	Range for 1915		Range for 1916		Range for 1917		Closing, May 31,
	High.	Low.	High.	Low.	High.	Low.	1917.
Iron and Industrial Stocks.							
Allis-Chalmers Mfg.	49½	73¼	88	19	32½	20½	31
Allis-Chalmers Mfg. pfd.	85½	33	92	70	86½	70	86½
American Can 68½	25	68	44	53	36	50½	
American Can pfd. 113½	89	115½	107½	110½	103	168½	
American Car & Fdy. 98	40	78½	52	77½	57	75½	
American Locomotive 73¾	19	98½	58*	82¾	62½	74	
American Smelt'g & Refining	108½	56	123¾	88½	111	93½	105½
American Steel Foundries .. 74½	24½	73	44	73½	52	71	
American Zinc, Lead & Smelt'g	71	67¼	97½	29½	41½	28	71
Anaconda Copper 91½	49½	105½	77	87	70	84½	
Baldwin Locomotive 154½	26½	118½	52	66½	43	76½	
Bethlehem Steel 600	46¾	700	415	515	119	141½	
Bethlehem Steel pfd. 184	91	168	126	135	117½	129	
Chino Copper 57½	32¾	74	46½	63¾	48½	58½	
Colo. Fuel & Iron Co. 66½	21¾	69½	38¾	55½	38½	53½	
Crucible Steel 109½	13½	99½	50½	83½	50½	80	
Crucible Steel pfd. 112½	84	124½	108½	117½	104	110	
Driggs-Seabury ..... ..	...	119½	45½	87½	39½	72	
General Electric 185½	138	187½	159	171¾	150½	165½	
Granby Consolidated 91	79¼	120	80	92½	75½	84	
Great Northern Ore Prop. .. 54	25½	50¾	32	38½	27¾	34½	
Gulf States Steel ..... ..	...	193	71	137	99½	125	
International Harv. of N. J. 114	90	126½	108½	123	107½	117	
Inter. Harv. of N. J. pfd. ... 120	100	122	114	121	114	114½	
International Harv. Corp. ... 85	55	90½	68½	88	73	74	
Inter. Harv. Corp. pfd. 114	90½	114¾	104½	114	102	102	
Lackawanna Steel 94¾	28	107	64	98½	70½	87	
National Enam. & Stamp. 36½	9½	36½	19¾	39½	24	38	
National Enam. & Stamp. pfd. 97	79	100½	90½	101	90½	97¾	
National Lead 70¾	44	74½	57	68½	52	57	
National Lead, pfd. 115	104¾	117½	111½	114	101	109½	
New York Air Brake 164¾	56½	186	118	156	128	152	
Pressed Steel Car 78¾	25	88½	42½	83½	70	78½	
Pressel Steel Car, pfd. 106	86	108	8½	106	100¾	162	
Railway Steel Spring 54	19	61¾	32	55½	43	54½	
Railway Steel Spring pfd. .. 102	86½	104¾	95½	101	94	100¾	
Ray Consolidated Copper 27½	15¾	37	20	32½	23	30½	
Republic Iron & Steel 57½	19	93	42	94	60	128	
Republic Iron & Steel, pfd. ... 112½	72	117	101	105½	99	105	
Sloss-Sheffield 66½	22	93½	37	74½	42½	62½	
Sloss-Sheffield, pfd. 102	85	103½	91½	99	93	93	
Texas Company 237	120	241½	177½	243	199	221	
U. S. Cast Iron Pipe 31½	8	28½	16¾	24	17	22¾	
U. S. Cast Iron Pipe pfd. 55½	32½	67½	48½	62¾	54	58	
U. S. Smelting & Refining .. ...	...	81½	57	67¾	52½	61	
U. S. Smelting & Refining pfd. ...	...	53½	50	52½	49	71½	
U. S. Steel Corporation 89½	38	120½	79¾	136½	99	144½	
U. S. Steel Corporation, pfd. 117	102	123	115	121½	116½	119½	
Utah Copper 81¾	48½	130	73¾	118½	97	114½	
Virginia Iron, Coal & Coke .. 74	36	72½	41	77	46	66½	
Westinghouse Elec. & Mfg. .. 74¾	32	71½	51½	56	45½	54½	

Copper in May.

**Report of Commission Being Appointed to Handle Purchasing of All Raw Materials Arouses Intense Interest — Government Requirements and Probable Prices to be Paid Cause Much Discussion—
Losses Through U-Boats Estimated at 35,000 Tons—
Exports Largest on Record.**

Under the influence of a general belief in the copper trade, that the United States Government would pay not less than 25.00c to 26.00c per pound for copper needs, and that such requirements would necessarily be considerable—27,000,000 pounds alone, for bottoms, sheathing of 1,000 boats in the wooden fleet expected to be built—a stronger tone developed, with advancing prices especially noted in future positions. Large producers had nothing to offer until August, being practically sold through July. This fact accounted for the greater strength, and higher prices on third and fourth quarter positions. The former, advanced from 30.00c - 30.50c on May 1st, to 31.25 - 31.50c on the 31st and the latter from 26.00c - 27.00c to 28.50 - 29.50c at the close, a net rise of 1.25c on the third quarter, and of 2.50c on the fourth quarter position. Spot-May metal was scarce and quiet with prices nominally advanced from 30.50 - 31.00c to 31.00 - 32.00c for Lake, and from 31.00c - 31.50c to 32.25c - 32.75c for electrolytic, a net rise on Lake of .50c to 1c and of 1.25c on Electrolytic. Prices however, ranged as high as 32.50 - 33.00c, from the 7th to the 16th, after which time market became dull and easier, with a gradual recession in prices. Government needs and prices were not announced when the month closed, but the wooden ship-building program had become doubtful of execution in its entirety, which again affected the mental attitude of the trade in regard to the quantity of copper that would be required by the Government, but it was still thought that prices would be 25.00 - 26.00c per pound. An interesting point reported, was the tonnage of copper lost through German submarine depredations since January 1st, 1917—estimated at 35,000 tons. This partially accounted for the unusually heavy exports during the same period, which averaged approximately

101,000,000 pounds monthly and established a new high record for copper exports. Toward the close of the month a report from Washington that the Government was forming a plan to place the purchase of all raw materials in the hands of a single commission, caused excited interest in the metal trades, particularly in copper. Production in the first quarter was reported to have been in excess of anticipations, being now estimated at 100,000 long tons per month, while imports averaged 21,000 tons monthly.

Foreign Market Unchanged.

Foreign quotations remained unchanged, at £142 for spot American Electrolytic, and £138 for futures, these prices being merely nominal, as no purchases or sales are made without Government permission. Spot Standard was unchanged at £130 but futures were advanced £1 to £130 10s on the closing day of the month.

With actual conditions unchanged, during the first week, but with many encouraging rumors floating about—primarily emanating from Wall Street—the market gained in strength and firmness of tone, prices advancing from 31.00 - 31.50c to 32.50 - 33.00c per lb. for spot Electrolytic; May-June was offered at 1⁴c per pound less. Business was transacted in quite satisfactory volume with consumers, who came into the market to cover requirements for third quarter at 29.00c per pound, but after a few days buying, this price was advanced to 30.00c - 30.50c per pound, while the fourth quarter position ranged between 27.00 - 28.00c per pound. Casting copper was very scarce and prices were nominal at 29.50 - 30.00c per pound.

Serious Fire in Anaconda Mines.

A serious fire was reported in tramway mines of the Anaconda Company, that cuts off daily production of 5,000 tons of ore, recalling the similar though

Lake Copper Prices.

Monthly average prices of Lake Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.89	14.76	18.89	24.10	29.83
Feb.	15.37½	14.98	14.72½	27.44	34.04½
Mar.	14.96	14.72	15.11	27.42	35.33
Apr.	15.55	14.68	17.43	28.91½	32.46
May	15.73	14.44	18.81	29.28	31.90
June	15.08	14.15	19.92	27.44	
July	14.77	13.73	19.42	25.81	
Aug.	15.79	12.68	17.47	26.58	
Sept.	16.72	12.43	17.76	27.86	
Oct.	16.81	11.66	17.92½	28.37	
Nov.	15.90	11.93	18.86	31.71	
Dec.	14.82	12.16	20.37½	33.07½	
Av.	15.70	13.61	17.64	28.17	

Electrolytic Copper Prices.

Monthly average prices of Electrolytic Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.75½	14.45	13.71	24.10	30.26
Feb.	15.27	14.67	14.57	27.46	35.22
Mar.	14.92½	14.32½	14.96	27.44	35.74
Apr.	15.48	14.34	17.09	29.31	32.19
May	15.63	14.13	18.60	29.81	32.32
June	14.85	13.81	19.71	27.49½	
July	14.57	13.49	19.08	25.60	
Aug.	15.68	12.41½	17.22	27.36½	
Sept.	16.55	12.08½	17.70½	28.26	
Oct.	16.54	11.40	17.86	28.64	
Nov.	15.47	11.74	18.83	32.22½	
Dec.	14.47	12.96	20.35	33.84	
Av.	15.52	13.31½	17.47	28.46	

Casting Copper Prices.

Monthly average prices of Casting Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.57	14.27½	13.52	23.06½	28.04½
Feb.	15.14	14.48	14.17	26.03	31.73½
Mar.	14.76	14.18	14.34	25.90	32.18
Apr.	15.39	14.18	16.48	27.16	29.24
May	15.45½	14.00	17.41	27.37	30.11
June	14.72	13.65	18.74½	25.10	
July	14.40½	13.34½	17.76½	23.61	
Aug.	15.50	12.27	16.46	24.67	
Sept.	16.37½	12.00	16.75	25.93	
Oct.	16.33	11.29	17.32	27.17	
Nov.	15.19	11.63	18.41	30.37½	
Dec.	14.22	12.83½	19.73	31.74	
Av.	15.33	13.18	16.76	26.51	

Sheet Copper Price Changes.

The changes in the base price of sheet copper since Feb. 15, 1916 are given below, with price of Lake copper on the same date.

1916—	Sheet Copper.	Lake Copper.
February 29	34.00	28.37½
March 10	33.00	27.25
March 16	33.50	27.62½
April 3	34.50	27.62½
April 13	33.50	29.25
April 26	36.50	29.75
May 9	37.50	30.00
August 1	35.50	25.50
August 19	36.00	27.00
September 27	37.00	28.25
November 14	40.00	31.75
November 20	41.00	33.75
December 5	42.00	34.00
1917—		
February 19	44.00	35.25
April 10	42.00	36.75
April 23	40.00	39.75

Waterbury Copper Averages.

	1913.	1914.	1915.	1916.	1917.
Jan.	17.00	14.75	14.12½	24.75	32.25
Feb.	15.50	15.12½	15.25	27.75	35.25
Mar.	15.12½	15.00	15.75	28.00	35.50
Apr.	15.75	14.87½	18.50	29.00	32.75
May	15.87½	14.75	22.50	29.87½	32.00
June	15.37½	14.37½	22.50	28.25	
July	14.75	14.12½	22.25	27.25	
Aug.	15.62½	13.00	19.50	27.00	
Sept.	16.87½	12.87½	18.50	28.00	
Oct.	16.87½	12.25	18.25	28.87½	
Nov.	16.25	12.25	19.37½	33.25	
Dec.	15.00	13.50	20.75	34.25	
Av.	15.83	13.91	18.94	28.85½	

Exports of Copper From the United States.

	(In tons of 2,240 lbs.)			
	1914.	1915.	1916.	1917.
January ..	36,018	26,193	23,663	51,322
February ..	34,634	15,583	20,648	32,265
March ..	46,504	30,148	26,321	51,248
April	35,079	18,538	21,654	44,975
May	32,077	28,889	16,062	
June	35,182	16,976	39,595	
July	34,145	17,708	35,066	
August ...	16,509	17,551	32,190	
September	19,402	14,877	29,803	
October ..	23,514	24,087	33,224	
November	24,999	23,168	22,798	
December.	22,166	42,426	26,486	
Totals ...	369,229	276,344	327,410	

not so extensive fire in the mines of the same company, that has been burning for 28 years.

Early in the last fortnight, with less demand for copper, prices were shaded and manufacturers generally began to grow restless over the delay in placement of Government contracts which they were expecting to receive. United States Government statistics showed first quarter exports to have been record-breaking — nearly 302,000,000 pounds—not only for the quarter, but monthly average as well. Exports for the first four months were in excess of 179,000 tons—also a new maximum, the previous maximum having been in 1914, when Germany was preparing for the present war and when 152,000 tons of copper were sent abroad, during a similar period. Domestic consumes of copper, having contracts for brass and other finished materials, with the Allied Governments, have received considerable quantities of metal during this period and it is also known that the Entente Allies have made other disposal of copper in this country, held to their account. With these facts in evidence, there is small reason to believe that any new contracts are likely to be placed until arrangements for buying have been completed with the United States Government, which according to reports will not be until the commission for securing supplies is ready to transact business—probably late in June.

Nearby deliveries, May-June-July, were notable in increased offerings during the third week, and prices gradually declined when the demand fell off. Casting copper, too, after being firm at 31.00c for these positions, shared the same fate, declining to 30.00c per pound, but later recovered and advanced to 31.00-31.50c. After this, came

the report that the United States and the Allies would make purchases upon the same basis and a further fractional decline was noted. With renewed active buying in the last few days, prices again advanced but closed less firm at 31.00-32.00c for Prime Lake; 32.50-33.00c for Electrolytic and 30.50-31.00c for Casting, prompt shipment.

Total sales in May are estimated between 75,000,000 and 80,000,000 pounds. Dulness was pronounced during the first two weeks, but there was some improvement in the second half of the month.

Copper Prices in May.

Day.	— New York —			London.		
	Lake.	Electro.	Casting.	Standard.	£	s d
1	30.75	31.25	28.00	130 0 0		
2	31.00	31.75	29.00	130 0 0		
3	31.00	31.75	29.00	130 0 0		
4	31.00	31.75	29.25	130 0 0		
7	32.00	32.50	29.75	130 0 0		
8	32.00	32.75	29.75	130 0 0		
9	32.50	32.75	29.75	130 0 0		
10	32.50	32.75	29.75	130 0 0		
11	32.50	32.75	30.00	130 0 0		
14	32.50	32.50	30.75	130 0 0		
15	32.50	32.50	31.00	130 0 0		
16	32.50	32.50	30.87½	130 0 0		
17	32.00	32.25	30.25	130 0 0		
18	32.00	32.25	30.25	130 0 0		
21	32.00	32.25	30.50	130 0 0		
22	32.00	32.25	30.50	130 0 0		
23	32.00	32.25	30.50	130 0 0		
24	32.00	32.25	30.50	130 0 0		
25	32.00	32.25	30.75	130 0 0		
28	32.00	32.50	30.75	.....	
29	31.50	32.50	30.75	130 0 0		
30 ....	.....	.....	.....	130 0 0		
31	31.50	32.75	30.75	130 0 0		
High..	33.00	33.00	31.12½	130 0 0		
Low ..	30.50	31.00	27.50	130 0 0		
Av'ge.	31.90	32.32	30.11	130 0 0		

Copper Statistics for 1916.

Advance Statement by U. S. Geological Survey.

SMELTER PRODUCTION.

The smelter production of primary copper in the United States in 1916 was 1,928,000,000 pounds, compared with 1,388,000,000 pounds in 1915, an increase of 39%. The total value of the output in 1916 at an average price of 24.6 cents* a pound is \$474,288,000, compared with \$242,900,000 in 1915.

In the following table the production is apportioned to the States in which the copper was mined. The total is made up of fine copper contents of blister produced and of the smelter output of ingot and anode copper from Michigan.

Production of Copper in the United States in 1913, 1914, 1915 and 1916. (Smelter output, in pounds fine.)

	1913.	1914.	1915.	1916.
Alaska	23,423,076	21,985,847	70,695,286	113,825,064
Arizona	404,278,809	382,119,922	432,467,690	694,847,397
California	32,492,265	29,784,173	37,658,444	43,400,876
Michigan	155,715,286	158,009,748	238,956,410	269,794,561
Montana	285,719,918	256,805,845	268,263,040	352,149,765
Nevada	85,209,536	60,122,904	67,757,322	100,816,724
New Mexico	50,196,881	64,204,703	62,817,234	79,865,469
Tennessee	19,489,654	18,661,112	18,205,308	14,556,278
Utah	148,057,450	160,589,660	175,177,695	232,335,950
Other States	19,901,229	14,523,278	16,011,098	26,272,611
Total	1,224,484,098	1,150,137,192	1,388,009,527	1,927,850,548

PRODUCTION OF REFINED COPPER.

The total production of new refined copper in 1916 was 2,259,000,000 pounds, an increase of 625,000,000 pounds from the output in 1915.

Primary:	1913.	1914.	1915.	1916.
Domestic:				
Electrolytic	1,022,497,601	991,573,073	1,114,345,342	1,579,620,513
Lake	155,715,286	158,009,748	a 236,757,062	269,794,531
Casting	22,606,040	21,506,325	21,555,129	12,460,050
Pig	36,004,986	39,334,043	15,047,990	26,868,105
	b 1,236,823,913	b 1,210,423,189	b 1,387,705,523	b 1,888,752,199
Foreign (electrolytic)	b 378,243,869	b 323,358,205	b 246,498,925	b 370,635,116
	1,615,067,782	1,533,781,394	1,634,204,448	2,259,387,315
Secondary:				
Electrolytic	14,862,577	27,702,928	38,156,789	78,585,296
Casting	22,360,182	4,224,052	21,417,901	25,838,511
	37,222,759	31,926,980	59,574,690	104,423,807
Total output	1,652,290,541	1,565,708,374	1,693,779,138	2,363,811,122

(a) Some Lake copper was refined at seaboard plants and doubtless marketed under some brand other than Lake. This has been excluded from the Lake copper.

(b) The separation of refined copper into metal of domestic and foreign origin is only approximate, as an accurate separation at this stage of manufacture is not possible.

In addition to the secondary material treated by the regular refining companies, plants that treated secondary material exclusively produced a total of about 558,000,000 pounds of copper as copper and in brass and other alloys of copper, making a total production of 662,000,000 pounds from secondary sources. Of this total at least 250,000,000 pounds was produced by remelting clean scrap produced in the manufacture of copper and brass articles.

If the output of plants treating purely secondary material is added to the production of the regular refining companies, the contribution from plants in the United States to the world's supply of copper for 1916 is found to be 2,922,000,000 pounds.

In addition to the output of metallic copper the regular refining companies produced bluestone with a copper content of 14,043,315 pounds.

STOCKS OF REFINED COPPER.

Returns from all producing companies show that their stocks of Electrolytic, Lake, Casting, and pig copper on hand at the beginning and end of the year were as follows:

	Pounds.
January 1, 1916	82,429,666
January 1, 1917	128,055,229

Increased during 1916 45,625,563

In addition to the stocks of refined copper, there were reported as at the smelters, in transit to the refiners, and at the refineries, blister copper and material in process of refining to the amount of 424,000,000 pounds on January 1, 1917, compared with 274,000,000 pounds on January 1, 1916.

CONSUMPTION OF REFINED NEW COPPER.

The apparent consumption of refined new copper in the United States in 1916 was 1,429,755,266 pounds. In 1915 it was 1,043,461,982 pounds. The method employed in determining the quantity of copper retained for domestic consumption is shown in the following table, which does not include stocks of copper held by consumers:

	1913.	1914.	1915.	1916.
Total refinery output of new copper	1,615,067,782	1,533,781,394	1,634,204,448	2,259,387,315
Stock at beginning of year ...	105,497,683	90,385,402	173,640,501	82,429,666
Total available supply	1,720,565,465	1,634,166,796	1,807,844,949	2,341,816,981
Refined copper exported a	817,911,424	840,080,922	681,917,955	784,006,486
Stocks at end of year	90,385,402	173,640,561	82,429,666	128,055,229
Total withdrawn from supply	908,296,826	1,013,721,423	764,347,621	912,061,715
Apparent consumption	812,268,639	320,445,773	1,043,497,326	1,429,755,266
(a) Exports of pigs, ingots, bars, rods, etc., reported by the Bureau of Foreign and Domestic Commerce.				

If to the 1,429,755,266 pounds of new refined copper is added the 594,423,807 pounds of secondary copper and copper in alloys produced during the year, it is found that a total of about 2,024,000,000 pounds of new and old copper was available for domestic consumption

* The average price of 2,150,000,000 pounds of copper delivered in 1916, as reported to the United States Geological Survey by selling agencies, was 24.58c per pound.

Tin in May.

Interest Centered in Preparations Being Made for an Equitable Adjustment of Tin Supplies for Food Canners—Net Advance Here 5¹/₂c per lb.—Foreign Market up About £23—Import Duty Improbable.

Interest in trade circles in May, was centered in the outcome of negotiations that are still in progress at Washington in regard to the making of regulations affecting the pig tin supply, in order to secure an equitable adjustment of distribution among the different industries using tin. The important points to be considered and settled were: the holding of excessive tin safety stocks by some consumers when other manufacturing interests were in need of the metal in order to supply tin can makers in sufficient quantity to provide an adequate food supply; the proposed import duty of 10%, tin being on the free list, and the various restrictions attending the issuance of British permits which prohibits resales of metal by consumers and occasions delays whereby dealers are favored. On the very last day of the month, the Tin Committee appointed under Government direction by the American Iron & Steel Institute, sent out blanks and forms to consumers, jobbers, dealers, importers and producers of pig tin, to be filled in with answers to questions, designed to convey to the Committee, all the information needed before making decisions and adjustments in the problems that are to be solved. Of interest in connection with the import duty, the Senate Committee in its revision of the War Revenue Bill, passed by the House, eliminated the proposed 10% import duty on all articles on the free list. In view of this fact, it seems unlikely that the final legislation which makes the bill a law, will change it in any way to tax pig tin. A sensational advance in prices culminated about the middle of the month at 66.50c, the highest point, for spot Straits with Banca selling 2c less per pound. The net rise for the month, however, was 5.50c per pound, from 58.50c, May 1st, to 64.00c per pound, at the close.

Heavy Advance Abroad—Arrivals Large.

The fluctuations in the foreign mar-

ket were as great, top price being £256 10s for spot and future Standard and spot Straits, an advance of more than £25 from £230 2s 6d on May 1st. A recession after the middle of the month carried prices back to £253 10s at the close of May.

Total tin arrivals for the month were 5,895 tons, a very satisfactory showing under present shipping conditions.

Market Excited on Rumors of Import Duty—Excellent Demand.

At the beginning of the month, interest in Banca, Australian, Lamb & Flagg and Chinese tin in the various grades, was greater than in Straits tin, because of the high price of the latter, which was held at 58.50c-59.25c per pound. Quiet trading in fair volume was noted throughout the first week, for all deliveries, covering three to four months. The second week began with the best demand experienced in a long time, with sales amounting to 400 tons in two days. There was considerable excitement in regard to the proposed 10% import duty, affecting pig tin, about this time, and it was pointed out that the American consumer would be obliged to carry the entire burden of this tax, in compliance with New York tin contract existing regulations. Many in the trade expressed the opinion that the Government, which is seeking in every way to increase the tin plate supply for the benefit of canners of food, would surely make some modification of the bill in favor of exempting tin from the general list. The proposed duty would add 5c to 6c per pound to the cost of pig metal. Because of uncertainty in this matter, trading was restricted, but prices advanced to 64.75-65.00c per pound for spot Straits and to 62.00-62.50c for Banca, ex steamer at dock, just arrived. The foreign market was up about £14 on all positions in both Standard and Straits, equivalent to about 3c per pound, since May 1st.

Reaction Sets In.

By the 14th, the cheapest future Straits tin in New York, was held at 58.00c per pound and spot Banca was 63.00c. Spot Straits was nominal at 65.00c. The trade began to consider that if the treatment of Bolivian ores in the United States becomes wholly successful, that it may in time free the trade from England's domination of the tin market. In the next two days the advance abroad, carried the price of spot and future Standard and spot Straits to £256 10s, the quotation from the Far East rising to £261 c.i.f. London, on the 17th. Spot Straits here, rose to 66.50c per pound and Banca to 64.00c. A reaction immediately began in the foreign market but prices remained firm here for a few days but with small, if any, trading. apprehension as to the safety of tin afloat, was noted about this time, and dissatisfaction with existing British permit regulations again came into prominence. Gradually, with the continued safe arrival of tin-laden ships, prices receded. On the 25th, the appointment of a committee under the direction of the Government, was announced, that would begin an investigation of pig tin problems. The result of this investigation is of vital interest to the entire industry. With the arrival of 600 tons of Banca tin late in the month, the price of this variety declined to 61.00c per pound. Rather unsettled conditions pre-

vailed on the closing day, when spot Straits was held at 64.00c, but the prompt action of the Tin Committee in sending out forms of questions to gather information from the entire industry was highly interesting to all concerned.

Tin Prices in May.

Day.	New York.	London.		
	Cents.	£	s	d
1	58.50	230	0	0
2	58.50	229	15	0
3	58.50	229	10	0
4	58.75	231	0	0
7	59.00	232	0	0
8	59.50	232	10	0
9	63.00	234	15	0
10	64.00	240	10	0
11	64.25	243	0	0
14	65.00	246	15	0
15	66.00	253	0	0
16	66.50	256	10	0
17	65.50	252	5	0
18	65.00	250	10	0
21	65.25	251	10	0
22	65.62 ¹ / ₂	254	5	0
23	65.50	255	5	0
24	65.50	255	5	0
25	65.00	253	15	0
28	65.00			
29	64.62 ¹ / ₂	253	10	0
30		253	10	0
31	64.00	253	10	0
High	66.50	256	10	0
Low	58.50	229	10	0
Average	63.29 ¹ / ₂	245	2	2

¶ See pages 280, 281 for Report Blank for consumers, jobbers, importers, dealers, etc., as drawn up by the Sub-Committee on Tin; American Iron and Steel Institute.

Tin Statistics.

Compiled by New York Metal Exchange.
(Tons of 2,240 lbs.)

	May 1917.	April 1917.	May 1916.
To Gt. Britain ..	3,522	1,170	1,415
" Continent ..	1,110	1,178	495
" U. S.	2,234	1,745	2,145
Total from Straits	6,866	4,393	3,965
Total from Australia			412
Consumption			
London deliveries	1,801	1,634	1,758
Holland deliveries	82	83	94
U. S.	5,749	4,380	5,455
Total	7,632	6,097	7,307
Stocks at close of month			
In London—			
Straits, Australia	3,404	3,637	2,512
Other kinds	359	491	1,862
In Holland			7
In U. S.	1,402	1,707	2,168
Total	8,165	5,745	6,849
Afloat close of month			
London	5,702	4,170	3,460
Banca & Billiton.	1,641	3,230	4,498
U. S.	3,806	4,902	1,897
Total	11,239	12,302	12,765
	May 31,	April 30,	May 31,
Total visible supply	19,404	18,047	19,614

Straits Tin Prices In New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	50.45	37.74	34.30	41.88	44.19
Feb.	48.75	39.93	37.32	42.63	51.37
Mar.	46.88	38.08	40.93½	50.42	54.36
Apr.	49.12	36.10	47.98	51.75	55.91
May	49.44	33.30	38.78	49.15	63.29½
June	44.93	30.65	40.37	42.18	
July	40.39	31.75	37.50	38.46	
Aug.	41.72	50.59½	43.39	38.54	
Sept.	42.47	32.79	33.13	38.70½	

Visible Supplies.

	1913.	1914.	1915.	1916.	1917.
Jan.	13,971	16,244	13,901	17,041	18,169
Feb.	12,304	17,308	14,548	16,511	19,627
Mar.	14,132	16,989	15,467	18,782	20,307
April	9,822	15,447	15,785	19,739	18,047
May	13,710	17,862	14,646	19,614	
June	11,101	16,027	15,927	19,363	
July	12,063	14,167	16,084	18,404	
Aug.	11,261	14,452	15,127	18,042	
Sept.	12,943	14,613	15,191	16,192	
Oct.	11,857	10,894	13,154	17,415	
Nov.	14,470	11,483	16,451	21,186	
Dec.	13,893	13,396	16,216	20,737	
Av'ge	12,377	14,907	15,208	18,585	

Shipments From the Straits.

Monthly shipments of tin from the Straits
Settlements to Europe and United States:

	1913.	1914.	1915.	1916.	1917.
Jan.	6,050	5,290	5,200	6,095	4,815
Feb.	4,660	6,520	5,584	6,250	6,255
Mar.	4,810	4,120	4,970	5,170	5,134
April	4,400	4,930	5,270	4,685	4,393
May	6,160	6,900	6,759	3,965	
June	4,280	5,870	6,665	6,210	
July	4,770	4,975	5,606	5,410	
Aug.	6,030	3,315	4,712	4,526	
Sept.	5,160	4,973	5,296	3,270	
Oct.	5,020	4,610	4,441	5,868	
Nov.	5,560	5,155	6,713	5,380	
Dec.	5,110	6,435	5,301	4,758	
Total	62,550	63,093	66,517	61,587	
Av'ge.	5,213	5,258	5,543	5,132	

Consumption In the U. S.

Monthly deliveries of tin in the United States exclusive of Pacific Coast:

	1913.	1914.	1915.	1916.*	1917.*
Jan.	3,700	3,600	2,300	4,452	7,177
Feb.	3,500	3,300	3,375	6,388	3,930
Mar.	5,900	4,450	3,200	4,726	4,894
April	3,450	4,300	3,200	1,202	4,380
May	3,350	3,800	5,600	5,455	
June	3,800	3,650	3,900	6,398	
July	3,900	3,900	5,300	4,432	
Aug.	3,600	2,900	4,500	4,335	
Sept.	3,100	3,600	4,300	4,025	
Oct.	3,700	3,700	4,900	4,556	
Nov.	2,800	2,600	2,975	3,165	
Dec.	3,100	1,900	5,200	4,082	
Total	43,900	41,700	48,750	56,216	
Av'ge.	3,658	3,475	4,062	4,685	

* Includes deliveries at Pacific coast.

GOVERNMENT ACTION TO CLEAR UP THE TIN SITUATION

NEW YORK, May 31, 1917.

Mr. B. M. Baruch, Chairman, Committee on Raw Materials, Minerals and Metals of the Advisory Commission of the Council of National Defense, acting for himself and the Secretary of War, and also representing the Secretary of the Navy, requested the President of the Iron and Steel Institute to act as chairman and to appoint other members of a Committee on Steel and Steel Products to co-operate with the Government, and in accordance with this authority, a Sub-Committee on Tin has been formed to obtain full and accurate information regarding the Pig Tin situation so as to intelligently formulate recommendations under which available supplies may be equitably distributed to consumers through the regular trade channels.

This Committee decided to ask each consumer, producer, importer, dealer and jobber to send promptly to John Hughes, Chairman, Sub-Committee on Tin, 71 Broadway, New York, N. Y., a full statement showing particulars as stated below, namely:

From Consumers and Jobbers:

1. Average monthly consumption July 1, 1916, to December 31, 1916, and January 1, 1917, to April 30, 1917.
2. Kind of Tin, whether Straits, Banca, Billiton, Chinese, English Lamb and Flagg, American, etc., and purposes for which each kind is used.
3. Stock on hand May 1, 1917, showing quantity of each kind of Tin.
4. Estimated monthly requirements, based on manufacturing obligations, from May 1, 1917 to December 31, 1917.
5. Quantity of each kind of Tin purchased, or contracted for, but not included in Stock on Hand as of May 1, 1917, with name of supplier and contract delivery date.
6. In cases where delivery has not been made, as required by contract, state reasons given therefor and quantity involved.

From Importers and Dealers:

1. Stock on hand May 1, 1917, showing quantity of each kind of Tin.
2. Quantity of Tin bought or contracted for, including purchases for future delivery or due to arrive, but not included in Stock on Hand as of May 1, 1917.
3. Obligations to which Dealer or Importer is committed to meet, against such stocks, arrivals and future purchases.
4. In cases where delivery has not been made, as required by contracts, state reasons given therefore and quantity involved.

From American Producers (either Smelters or Detinners):

1. Average monthly production from July 1, 1916, to December 31, 1916, and from January 1, 1917, to April 30, 1917.
2. Kind and quality of Tin produced as compared with English Standard, Straits, Banca, Billiton, Chinese, or English, Lamb and Flagg.
3. Stock on Hand May 1, 1917, showing quantity of each kind of Tin.
4. Estimated production from May 1, 1917, to December 31, 1917.
5. Contract Obligations.

The above information to be kept strictly confidential and not to be divulged except to Government Authorities.

It is proposed to arrange through the proper Governmental channels.

(1) To secure abrogation or a modification of the clause in the British Tin Guarantee preventing consumers from selling Tin, which they have bought and may be able to spare so that same may be sold to other consumers under suitable restrictions protecting the Tin Guarantee, the object being to enable the Sub-Committee to recommend the disposition of Tin held by one consumer to another consumer who may need it.

(2) To arrange to have permits for the exportation of Tin from Great Britain and Possessions issued to individual American consumers, jobbers, importers and dealers to cover their monthly requirements, these permits to be allocated

(a) as to Consumers and Jobbers, on the bases of the monthly requirements of each

(b) as to Importers and Dealers, on the bases of their commitments to approved consumers and jobbers with relation to the monthly consumption or requirements of such consumers and jobbers.

In cases where the reports called for, as above, show that some consumers are in immediate need of Tin supplies, the Sub-Committee proposes to devise and recommend means under which the shortage may be relieved.

Blank forms, as given below, have been sent out with request to fill in with the information called for, sign and return before June 8, 1917, to JOHN HUGHES.

Yours very truly,

JOHN HUGHES,
Chairman, Sub-Committee on Pig Tin.

REPORT BLANK FOR CONSUMERS AND JOBBERS.

STRICTLY CONFIDENTIAL

MR. JOHN HUGHES, Chairman, Name
 Sub-Committee on Pig Tin, Address
 71 Broadway, New York, N. Y. Date

Dear Sir:— PIG TIN

Replying to your inquiry of May 31st, 1917, asking for reply before June 8, 1917, the following information on this subject, relating to the business of the above named firm, is submitted:

- (1) **Average Monthly Pig Tin Consumption:**
 July 1, 1916 to December 31, 1916.....Gross Tons Per Month.
 January 1, 1917 to April 30, 1917.....Gross Tons Per Month.
- (2) **Kind of Tin and Purpose for which used:**
 Kind Use
- (3) **Stock on Hand May 1, 1917:**
 Gross Tons Kind
- (4) **Estimated Monthly Requirements, Based on Manufacturing Obligations:**
 May 1, 1917, to December 31, 1917..... Gross Tons Per Month.
 Reason for Increase, if any
- (5) **Quantity of Tin Purchased or Contracted for, Not Included in Stock on Hand May 1, 1917:**

Supplier	Position	Kind of Tin	Quantity, Gr. tons.
.....			

- (6) **Deliveries Overdue on Contracts Included Under Item 5:**

Supplier	Position	Kind of Tin	Quantity Gross Tons	Reason for Delay
.....				

REPORT BLANK FOR IMPORTERS AND DEALERS

STRICTLY CONFIDENTIAL

MR. JOHN HUGHES, Chairman, Name
 Sub-Committee on Pig Tin, Address
 71 Broadway, New York, N. Y. Date

Dear Sir:— PIG TIN

Replying to your inquiry of May 31, 1917, asking for reply before June 8, 1917, the following information on this subject, relating to the business of the above named firm, is submitted:

- (1) **Stock on Hand May 1, 1917:**
 Gross Tons Kind
- (2) **Quantity of Tin Bought or Contracted for, Not Included in Stock on Hand May 1, 1917:**

Supplier	Position	Kind of Tin	Quantity, Gr. Tons.
.....			
- (3) **Obligations Against Such Stocks, Arrivals and Future Purchases:**

Buyer	Position	Kind of Tin	Quantity, Gr. Tons
.....			
- (4) **Deliveries Overdue on Obligations Included Under Item 3:**

Buyer	Position	Kind of Tin	Quantity Gross Tons	Reason for Delay
.....				

REPORT BLANK FOR PRODUCERS (SMELTERS AND DETINNERS)

STRICTLY CONFIDENTIAL

MR. JOHN HUGHES, Chairman, Name
 Sub-Committee on Pig Tin, Address
 71 Broadway, New York, N. Y. Date

Dear Sir:— PIG TIN

Replying to your inquiry of May 31, 1917, asking for reply by June 8, 1917, the following information on this subject, relating to the business of the above named firm, is submitted:

- (1) **Average Monthly Pig Tin production:**
 July 1, 1916 to December 31, 1916.....Gross Tons Per Month
 January 1, 1917, to April 30, 1917.....Gross Tons Per Month
- (2) **Kind and quality of Tin produced, as compared with English Standard, Straits, Banca, Billiton, Chinese, or English Lamb and Flagg.**

- (3) **Stock on Hand May 1, 1917:**
 Kind Gross Tons
- (4) **Estimated production:**
 May 1, 1917, to December 31, 1917..... Gross Tons Per Month.
- (5) **Contract Obligations:**

Buyer	Position	Kind of Tin	Quantity, Gr. Tons.
.....			

Spelter in May.

U. S. Government Orders Disappointing—Futures Sell at a Premium—Zinc Ores Up \$5 per Ton—Production of First Four Months Largest on Record—Month Closes With Prompt Prices Unchanged; Futures $\frac{1}{4}$ c to $\frac{3}{8}$ c Higher.

The effect of the long expected announcement of prices to be paid by the United States Government—11.50c for grade A, 11c for grade B and 9c for grade C, with grade C protected against further decline—which was published May 7th, was not so immediately salutary as anticipations had supposed it would be and the initial orders, placed for delivery over the next 12 months, were somewhat disappointing; being mainly for other grades than prime Western of which only 225 tons were bought—this amount being merely an ordinary sale of spelter. The Government order included 6,703 $\frac{3}{4}$ tons grade A, 3,440 $\frac{1}{2}$ tons grade B, and 225 tons grade C, a total of 10,369 $\frac{1}{4}$ tons. Reports in circulation about the middle of the month indicated that any future orders placed by the Government would be at higher prices.

The renewed buying movement, noted at the April close, developed into alternating periods of dulness and moderate activity as the month progressed, with a fairly satisfactory volume of business transacted during the month.

An unusual and interesting condition in the industry was noted in the fact that prices of future positions advanced to the level of any beyond the prices of prompt metal. The latter, after declining $\frac{1}{4}$ c per pound by May 4th, gradually recovered the loss and closed unchanged from May 1st, at 9.55 to 9.67 $\frac{1}{2}$ c New York, and 9.37 $\frac{1}{2}$ to 9.50c East St. Louis. A comparison between prices at the beginning and the close of May, shows prompt, May and June metal unchanged as just noted, while third quarter position on May 1st was 9.30 to 9.55c New York, and 9.12 $\frac{1}{2}$ to 9.37 $\frac{1}{2}$ c East St. Louis; on May 31st, July and third quarter had advanced fractionally beyond prompt, May and June positions to 9.55 to 9.80c New York and to 9.37 $\frac{1}{2}$ to 9.62 $\frac{1}{2}$ c East St. Louis. Fourth quarter position at the

close was held at the same figures as prompt, June positions, 9.55 to 9.67 $\frac{1}{2}$ c New York and 9.37 $\frac{1}{2}$ to 9.50c East St. Louis; the result being a net advance of $\frac{1}{4}$ c per pound for the third quarter, and of $\frac{3}{8}$ c per pound for fourth quarter, while prompt metal registered neither a loss nor a rise.

Zinc ores were advanced from \$65 to \$72.50 to \$70 to \$80 per ton, for the various grades and production for the first four months, 1917, was reported to have broken all previous records—257,255,990 pounds of zinc contents.

The foreign market was quoted officially at £54 but sellers privately were said to be asking £57 to £58 for early delivery.

Spelter Prices in May.

Day.	New York.	St. Louis.	London.	
	Cents.	Cents.	£	s d
1	9.61 $\frac{1}{4}$	9.43 $\frac{3}{4}$	54	0 0
2	9.61 $\frac{1}{4}$	9.43 $\frac{3}{4}$	54	0 0
3	9.55	9.37 $\frac{1}{2}$	54	0 0
4	9.42 $\frac{1}{2}$	9.25	54	0 0
7	9.36 $\frac{1}{4}$	9.18 $\frac{3}{4}$	54	0 0
8	9.36 $\frac{1}{4}$	9.18 $\frac{3}{4}$	54	0 0
9	9.36 $\frac{1}{4}$	9.18 $\frac{3}{4}$	54	0 0
10	9.42 $\frac{1}{2}$	9.25	54	0 0
11	9.42 $\frac{1}{2}$	9.25	54	0 0
14	9.42 $\frac{1}{2}$	9.25	51	0 0
15	9.42 $\frac{1}{2}$	9.25	54	0 0
16	9.36 $\frac{1}{4}$	9.18 $\frac{3}{4}$	54	0 0
17	9.36 $\frac{1}{4}$	9.18 $\frac{3}{4}$	54	0 0
18	9.42 $\frac{1}{2}$	9.25	54	0 0
21	9.48 $\frac{3}{4}$	9.34 $\frac{1}{4}$	54	0 0
22	9.55	9.37 $\frac{1}{2}$	54	0 0
23	9.55	9.37 $\frac{1}{2}$	54	0 0
24	9.55	9.37 $\frac{1}{2}$	54	0 0
25	9.55	9.37 $\frac{1}{2}$	54	0 0
28	9.55	9.37 $\frac{1}{2}$	.....	.....
29	9.55	9.37 $\frac{1}{2}$	54	0 0
30 .....	.....	.....	54	0 0
31	9.61 $\frac{1}{4}$	9.43 $\frac{3}{4}$	54	0 0
High	9.67	9.50	54	0 0
Low	9.30	9.12 $\frac{1}{2}$	54	0 0
Average ...	9.48	9.30 $\frac{1}{2}$	54	0 0

Spelter Prices in St. Louis.

Extreme price fluctuations of Prime Western Spelter, East St. Louis delivery, by months and years.

	1914			1915			1916			1917		
	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.
Jan.	5.25	5.10	5.14	7.62½	5.55	6.33	19.25	17.12½	18.01	10.87½	9.00	9.82
Feb.	5.35	5.20	5.27	10.00	7.65	8.62	21.00	18.50	19.92	10.75	9.37½	10.32
Mar.	5.22½	5.12½	5.15	11.00	8.87½	9.80	20.62½	16.25	17.91½	10.87½	10.37½	10.65
April	5.12½	4.85	5.03	14.00	9.25	11.22	19.25	17.50	18.44	10.50	8.75	9.55
May	5.00	4.90	4.96	21.00	13.00	15.52	17.75	15.12½	15.75½	9.50	9.12½	9.30½
June	4.97½	4.82½	4.93	27.00	17.50	22.14	13.87½	10.87½	12.62			
July	4.95	4.80	4.84	22.75	17.75	20.53	9.75	8.20	8.92			
Aug.	6.00	4.70	5.45	18.00	10.75	14.19	11.00	8.62½	9.52½			
Sept.	5.85	4.95	5.33	15.25	13.37½	14.10½	9.62½	8.50	9.06			
Oct.	5.00	4.60	4.81	14.62½	13.25	13.89	10.37½	9.25	9.83			
Nov.	5.20	4.80	4.97	19.00	14.37½	16.87½	13.12½	10.25	11.75			
Dec.	5.65	5.20	5.49	18.00	14.75	16.72	13.12½	9.62½	11.11			
Year	6.00	4.60	5.11½	27.00	5.55	14.16	21.00	8.50	13.57	10.87½	8.75	9.93

* Four months.

Spelter Prices in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	7.23	5.34	6.52	18.18½	9.97
Feb.	6.49	5.46	8.86½	20.09	10.49
Mar.	6.29	5.35	10.12½	18.10	10.82½
April	5.79	5.22	11.51	18.61½	9.73
May	5.51	5.16	15.82	15.93	9.48
June	5.23½	5.12	22.62½	12.80	
July	5.41	5.03	20.80	9.70	
Aug.	5.80	5.63	14.45	9.10	
Sept.	5.83	5.52	14.49	9.23½	
Oct.	5.47	4.99½	14.07	10.01	
Nov.	5.34	5.15	17.04	11.92½	
Dec.	5.22	5.67	16.91	11.28½	
Av.	5.80	5.30	14.44	13.75	

Waterbury Spelter Averages.

	1913.	1914.	1915.	1916.	1917.
Jan.	7.56	5.54	6.55	22.25	13.05
Feb.	6.81	5.70	11.85	22.70	13.80
Mar.	6.56	5.59	12.15	23.15	13.45
April	6.08	5.50	13.85	23.20	11.85
May	5.77	5.28	20.55	21.20	11.05
June	5.50	5.37	25.60	17.40	
July	5.61	5.26	24.90	15.20	
Aug.	5.99	5.66	19.30	13.60	
Sept.	6.13	5.91	17.85	13.70	
Oct.	5.74	5.23	16.85	12.95	
Nov.	5.60	5.38	19.36	14.10	
Dec.	5.44	5.90	21.15	13.20	
Av'ge	6.06½	5.53½	17.50	17.72	

Sheet Zinc Price Changes.

The following table gives the changes in the base price of sheet zinc since June 27, 1916, together with the price of spelter ruling on the same day.

	Spelter	Sheet Zinc.	St. Louis.
1916—			
June 27	18.00	11.37½	
July 6	17.00	9.37½	
July 11	15.00	8.62½	
October 26	16.00	10.12½	
November 10	17.00	11.12½	
November 17	18.00	12.00	
November 20	19.00	12.12½	
November 24	20.00	12.87½	
November 24	21.00	12.87½	
April 25	20.00	8.87½	
April 26	19.00	9.00	

Exports of Domestic Spelter and Sheets--Short Tons.

	1916		1917	
	Tons.	Value.	Tons.	Value.
Jan.	10,483	\$3,601,970	15,351	\$4,455,110
Feb.	10,328	3,638,003	15,551	3,933,947
Mar.	8,171	2,902,472	17,408	4,927,420
April	9,133	3,461,914		
May	8,583	3,093,620		
June	11,309	4,036,656		
July	12,708	4,230,805		
Aug.	18,661	5,549,581		
Sept.	19,255	5,150,808		
Oct.	19,994	5,758,357		
Nov.	18,991	5,291,493		
Dec.	15,652	4,774,158		
Total	163,268	\$51,489,837		

Market Firm But Quiet.

On May 1st, the excitement attending the heavy buying that had occurred in the last few days of April, had subsided, but prices remained firm until toward the end of the first week, when the lack of interest shown by brass special buyers and continued uncertainty as to Government requirements, were given as reasons for the recession to 9.30 to 9.55c for spot, May and June, New York, with 9.12½ to 9.37½c East St. Louis. Third quarter was held at 9.30 to 9.42½c, New York and 9.12½ to 9.25c, East St. Louis; fourth quarter being 8.92½ to 9.17½c, New York, 8.75 to 9.00c, East St. Louis.

Government Prices Announced.

The prime feature of interest in the next week was the announcement of prices fixed by the Government to be paid for its initial order placed for various grades of slab zinc. Grade A, 11.50c per pound; grade B, 11c and grade C, 9c per pound protected against any decline; all orders were for carload lots with freight allowed to New York delivery rate points. Since the war began, grade A has sold as high as 42c per pound and 18c was the price when the Zinc Committee decided the prices to be paid. Grade C—prime Western—during the war has sold as high as 27.50c per pound and the market price when the Committee's decision was made was 10c per pound. The first report gave the initial order of the Government at 25,000,000 pounds, principally for grades A and B, including other high grades, and with small call for prime Western. Later, it was ascertained that the order was not nearly so large. No apparent effect, such as had been expected to follow the settlement of this question was noted; the market continued firm at unchanged prices. Joplin reported production for

first four months, 1917, to have established a new high maximum in the Missouri-Kansas-Oklahoma district, at 251,255,990 pounds, with heaviest sales made in March. The total valuation of the entire production was estimated at \$10,143,889. Dulness reigned at this time, and some brass mills were reported to be operating at 30 to 35% less than six months ago.

Zinc Ores Up \$5.

In the beginning of the second fortnight, zinc ores advanced \$5 per ton and April exports were reported to have been 5,268 tons. On the 16th, spot and future positions were held at identical figures, with dealers buying while consumers were reserved. Two days later, sellers began to show reserve in anticipation of better demand and higher prices, the tone of the market being very firm. On the 22nd, 9.25c per pound was bid on all positions and on the next day, for the first time since the great war began, future positions were held at a premium. The demand from dealers who had been buying for a week past, became less active and the small demand from consumers was quickly satisfied. During the last few days, it was reported that manufacturers to whom Government orders had been given for brass rods and fuses, were directed to buy their own spelter but this was not verified. On the 29th, some difficulty was experienced in placing an order for 1,500 to 2,000 tons, for last half delivery on the 9.37½c East St. Louis basis, and on the last day, producers sold fair-sized quantities of third quarter spelter at 9.50c, East St. Louis. Many old time smelters were said to have ceased operations and a few of the larger plants, finding it unprofitable to continue, have also retired—in this way helping to regulate the supply and demand.

Lead in May.

Market Strong and Active Throughout May—Scarcity of Spot Metal Advances Price 1½c Per Pound—Exports From Spain Suspended—Trust Price Advanced \$20 Per Ton—Lead Ores Up \$10.

An inadequate supply of metal, which made spot lead, at times during the month, practically unobtainable, while restricting actual business transactions added greatly to the already strong position of the metal which was still undiminished in strength when the month closed. Prices advanced steadily from 10c for spot, May and June positions on May 1st, to 11.50c per pound on May 31st, New York—a net advance of 1½c per pound. At St. Louis, the advance was from 9.75c May 1st to 10.25 to 11.50c on the last day.

The American Smelting & Refining Company in two advances of \$10 per ton each, one on May 2nd, and the other on May 17th, made a total advance of 1c per pound in its official base price to 10c, New York and to 9.92½c St. Louis. Lead ores were also very strong, advancing from \$110 per ton at the beginning of May to \$125 during the third week, after which there was a recession to \$120—a net raise of \$40. Production in the Joplin district broke all previous records with a total of 42,220,520 pounds valued at \$2,341,145.

Severe restrictions were reported in the foreign market, due to the necessity of conserving supplies and because of unsatisfactory shipping conditions. Spain, a large producer of lead, found it necessary to temporarily suspend exports of all metals which further accentuated the already existing scarcity of lead.

Large Sales of Futures—Spot Very Scarce—Trust Price Advanced \$10 Per Ton.

During the first week, which opened strong at unchanged April closing prices, there was considerable excitement, due to the known scarcity of metal, the anticipation that Government requirements would necessarily be very large and to the advance in the official base price of the Trust to 9.50c New York, 9.42½c St. Louis. Immediately, in the outside market, there

was an advance of ½c per pound on all positions. Large sales were reported for June and July deliveries with spot metal unobtainable in not a few instances. Reserve among some dealers was due to the uncertainty concerning Government needs and prices, with the desire to conserve supplies for such needs. In the following week, some large producers withdrew from the market because of the same lack of information. Reported orders by the Government of 2,500 tons for May-June shipment, at unannounced prices, were attributed to the negotiations under way in an effort to secure information that will enable the Government to make equitable adjustment concerning not only prices but distribution as well.

Lead Prices in May.

Day.	New York*	St. Louis.	London.
	Cents.	Cents.	£ s d
1	10.00	9.75	30 10 0
2	10.12½	9.87½	30 10 0
3	10.12½	9.87½	30 10 0
4	10.25	10.00	30 10 0
7	10.25	10.12½	30 10 0
8	10.50	10.25	30 10 0
9	10.50	10.25	30 10 0
10	10.50	10.37½	30 10 0
11	10.50	10.37½	30 10 0
14	10.50	10.37½	30 10 0
15	10.50	10.37½	30 10 0
16	10.50	10.37½	30 10 0
17	10.62½	10.50	30 10 0
18	10.75	10.62½	30 10 0
21	10.75	10.62½	30 10 0
22	11.00	11.00	30 10 0
23	11.25	11.00	30 10 0
24	11.25	11.00	30 10 0
25	11.25	11.00	30 10 0
28	11.50	11.12½	.....
29	11.50	11.25	30 10 0
30	.....	.....	30 10 0
31	11.50	11.37½	30 10 0
High	11.50	11.50	30 10 0
Low	10.00	9.75	30 10 0
Average	10.71	10.52	30 10 0

Outside market.

Outside prices were \$15 per ton above the Trust price, an advance of $\frac{1}{8}$ c per pound.

Another \$10 Advance by Trust—Prices 150% Higher Since Beginning of War.

At the beginning of the second fortnight, one carload sale at 11.62 $\frac{1}{2}$ c New York for May-June delivery was made but scarcity of metal limited transactions. All offerings were quickly sold. On the 17th, the American Smelting & Refining Company again advanced its official price \$10 per ton to a basis of 10c New York and 9.92 $\frac{1}{2}$ c St. Louis. Outside prices by this time were all up 1c per pound from the opening figures. An active and widespread demand continued and sales of limited amounts were made, some irregularity in prices being reported. By the 21st, trading was practically suspended but the demand for metal continued un-

abated and a few days later, sales in earload lots were reported at 11c St. Louis, the same figure as the New York price. It was pointed out at this time that while lead was among the last of the metals to respond to the stimulus of the war demand, that prices have now advanced 150% since the war began. Activity continued and on the 24th, sales of prompt lead in New York were made at 11.50c per pound, New York and 11c St. Louis. In the last few days, the demand slackened somewhat but supplies had grown smaller and St. Louis prices had again advanced to the same figure as New York, June lead being sold there on the 29th at 11.00 to 11.50c per pound. On the last day, one producer reported making sales to regular customers at 10.25c for July shipment notwithstanding the fact that he knew outside prices were 11.25c for this position.

Review of Joplin Zinc and Lead Ore Markets For May.

Taken as a whole the month of May was one showing a recovery of better tone to the zinc ore market of this field although not to the extent of bringing back the optimism of previous months. The market opened weak, the average for the first week being but \$69 for zinc blende and \$34 for calamine. The following weeks saw a jump to higher levels and the average was \$77 and \$78 respectively for blende and \$39 and \$45 for calamine. The last week of the month while not showing weakness did show some hesitancy and for a while it was not known where the market would hold. The average stayed at \$76 for blende and \$40 for calamine.

On the basis of these prices there was a return to better sales and the last three weeks of the month showed sales approximating 10,000 tons of zinc ores weekly. This was close to the production of the district and the actual estimates of production and stock show a decline in stocks of 1,500 tons. The month opened with stocks at 20,000 tons and ended with 18,500 tons. On blende ores the average weekly ship-

ment was 8,917 tons and for calamine 626 tons. Singularly enough the first week of the month showed the smallest blende ore shipment and the last week the smallest calamine ore shipment.

The average prices for the month were \$75.72 for blende and \$39.25 for calamine. As compared with a year ago this makes practically a parallel with the then prevailing prices.

Production of blende ores has shown some increase as has also the shipment of this class of ores over the same period of 1916. The shipments show an increase of 16,886 tons while the amount of stock on hand in 1916 was 18,500.

Conditions of mining have grown rather serious during the month. This applies to mining in general and especially to the sheet ground field where the higher grade ores are produced. The cost of supplies has crawled upward all along the line until operators are wondering where it is going to stop. The cost of production has mounted until \$70 is not an uncommon figure which leaves so little margin for operation

and profit that there is serious apprehension of being forced to close some of the mines.

Labor is also short and with the harvest season coming on the operators are facing a further depletion of their forces and the consequent lower efficiency and higher cost entailed by short-handed operations. There is no relief in sight except that some of the mines close down and the others absorb their men, a thing likely to happen if there is not a further advance in ore prices soon.

The month also saw the closer organization of the mine operators to meet the growing seriousness of mining conditions. As a part of the plan to cope with them, a committee to handle

the sales of ore and to meet the Government needs for spelter was selected and consists of Howard I. Young, Temple Chapman, A. F. Carmean, and W. B. Shackelford.

The lead ore market was the one bright spot in the field. The market opened firm at \$115 and by the end of the month had advanced to \$120 with some sales reported as high as \$125. The average price for ore for the entire month was \$116.71. The average shipment per week was 1,415 tons. Naturally such high prices stimulated production and the summer months will doubtless see an increased ore output. The sales reduced the surplus stock from 965 tons at the beginning of the month to 495 tons at the end.

Antimony in May.

**Net Decline of 9c per Pound With Fair Volume of Business Done—
Market Quiet at the Close.**

The antimony story for May is one of recession in prices from 32.00 to 32.50c. May 1st, to 23.00 to 23.50c May 31st—a net decline of 9c per pound. Prices, however, dropped 1c lower to 22.50 to 23.50c on May 9th, after which the continued and active demand among dealers for various positions brought about a gradual recovery.

The continued activity and strength of future positions over the prompt delivery of metal, which attracted attention during the latter half of the preceding month, was not in any way diminished during May until in the last few days. The concentration of stocks in a few strong hands in anticipation of Government buying was also prominent, becoming evident simultaneously with confirmed rumors of Government orders for 3,000,000 shrapnel shells on the last day of the month, requiring about 1,500 tons of antimony. The official price in the foreign market remained unchanged at \$85 for English regulus, to home consumers for Government work but prices on other varieties in active demand, were very irregular, in a wide range of prices from £72 to £81 for Japanese May shipment, and £35 to £38 future positions and £40 to

£48 for Chinese spot metal.

Overland arrivals from the Pacific Coast early in the month, caused prompt metal to recede to 26 to 27c duty paid, for Chinese and Japanese antimony in the first week, while March shipment from the Orient minimum prices were 18.50c in bond; April 16.50c and May 15c c.i.f. New York. During the next week, a good inquiry from consumers was encouraging but the pressing of prompt sales caused the price to recede to 22.50 to 23.50c with one sale reported on May 8th as low as 22c, duty paid. The following day, however, the report of Government buying and the prospect of a 10% increase in the duty on importations of antimony, caused offerings to fall off and dealers began to buy actively, concentrating supplies of metal in strong hands. Prices advanced by the 14th, to 26c duty paid, for prompt metal; 17c c.i.f. New York for April shipments from the Orient and 1c per pound less for each succeeding month.

Future positions were very firm with fewer offerings, advancing to 21c for June shipment, duty paid, and 18.00 to 18.50c for August shipment about the middle of the month, with demand

a trifle less active. Later, with arrivals from the Orient, prompt position declined another cent to 25c with both future and spot metal unchanged for several days. The demand for future shipments again became active about the 23rd with prices advanced $\frac{1}{4}$ to $\frac{1}{2}$ c for May shipments from the Far East,

c.i.f., New York. In the last few days, prompt and May metal suffered a further recession to 22.50 to 23.50c and future positions were still in demand at 20.00 to 20.50c for June; 18.75 to 19.25c July and 18.00 to 18.50c for August shipments.

Aluminum in May.

Market Steady but Quiet Throughout May—Large Increase in U. S. Production.

The most interesting feature in May, to the aluminum trade, was the more definite news concerning the increase of production in this country to 150,000,000 pounds annually.

The Aluminum Company of America reported rapid progress at various plants in different parts of the United States where extensions to plants with improved facilities are being developed to increase supplies in anticipation of probable large requirements by the United States Government. The statistics of the U. S. Geological Survey reported the production of bauxite in 1916 to have increased 43% in quantity, and 52% in value over the previous year. The largest percentage of the increase was accredited to the output

of Georgia and Alabama. A report that a reliable soldering compound of aluminum and that a new method of galvanizing aluminum made the plating of the metal with brass, silver, nickel and gold entirely successful, also interested the trade.

The market throughout the month was inactive but steady. The export inquiries that interested the trade for several days preceeding the middle of the month did not result in the buying that was anticipated. Prices were unchanged at 59 to 61c for No. 1 Virgin and 58 to 59c for 98-99% pure remelted, but No. 12 alloy remelted advanced 1c from 40 to 42c during the first nine days, to 41 to 43c, being stationary for the remainder of the month.

Aluminum and Silver Prices.

	New York			
	Aluminum.		Silver —	
	1916.	1917.	1916.	1917.
Jan. ...	54.33	60.00	56.77 $\frac{1}{2}$	73.63
Feb. ...	57.50	58.05 $\frac{1}{2}$	56.75 $\frac{1}{2}$	77.57
Mar. ...	60.25	59.23	57.93 $\frac{1}{2}$	73.86
April ...	60.00	60.00	61.41 $\frac{1}{2}$	73.88 $\frac{1}{2}$
May ...	60.00	60.00	74.27	74.74 $\frac{1}{2}$
June ...	62.09		65.02 $\frac{1}{2}$	
July ...	60.15		62.94	
Aug. ...	59.48		66.08	
Sept. ...	61.90		68.51 $\frac{1}{2}$	
Oct. ...	64.55		67.85 $\frac{1}{2}$	
Nov. ...	64.80		71.60	
Dec. ...	63.40		75.76 $\frac{1}{2}$	
Average	60.73		65.66	

Lead Prices in New York.

Based on American Smelting & Refining Company's quotations on 50 ton lots.

	1913.	1914.	1915.	1916.	1917.
Jan. ...	5.35	4.11	3.74	5.94	7.81
Feb. ...	4.35	4.06	3.82	6.23	8.34
Mar. ...	4.35	3.97	4.03	6.83	8.98
April ...	4.40	3.82	4.20	7.50	9.00
May ...	4.36	3.90	4.23 $\frac{1}{2}$	7.50	9.71
June ...	4.35	3.90	5.87 $\frac{1}{2}$	7.02	
July ...	4.37	3.90	5.74	6.54	
Aug. ...	4.63	3.90	4.75	6.25	
Sept. ...	4.75	3.86	4.62	6.75	
Oct. ...	4.45	3.54	4.59 $\frac{1}{2}$	7.00	
Nov. ...	4.34	3.68	5.15	7.00	
Dec. ...	4.06	3.80	5.34 $\frac{1}{2}$	7.44	
Av. ...	4.40	3.87	4.67 $\frac{1}{2}$	6.83	

Lead Prices in St. Louis.

Extreme fluctuations of Soft Missouri Lead in St. Louis.

1914			1915			1916			1917		
High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.
Jan. 4.10	3.95	3.99½	3.65	3.50	3.57	6.00	5.45	5.80	8.25	7.30	7.58
Feb. 4.10	3.85	3.95	3.80	3.62½	3.72	6.37½	6.00	6.17	10.00	8.00	9.04
Mar. 3.87½	3.65	3.83½	4.12½	3.82½	3.98	8.25	6.40	7.46	10.00	9.25	9.53
April 3.80	3.65	3.70	4.15	4.07½	4.11	8.12½	7.32½	7.67	9.75	9.00	9.26
May 3.82½	3.77½	3.81	4.45	4.10	4.16	7.45	7.10	7.28	11.50	9.75	10.52
June 3.82½	3.77½	3.80	7.50	4.80	5.76	7.20	6.62½	6.77			
July 3.77½	3.72½	3.75	5.67½	5.30	5.52	6.67½	6.00	6.20			
Aug. 3.75	3.70	3.73½	5.20	4.30	4.59	6.75	5.75	6.19			
Sept. 3.75	3.55	3.67	4.82½	4.35	4.53	6.95	6.50	6.71			
Oct. 3.55	3.35	3.39½	4.82½	4.40	4.51½	6.90	6.85	6.87½			
Nov. 3.82½	3.37½	3.58	5.22½	4.82½	5.08	7.25	6.85	6.96			
Dec. 3.70	3.60	3.67	5.42½	5.10	5.26½	8.00	7.20	7.53			
Year 4.10	3.35	3.74	7.50	3.50	4.57	8.25	5.45	6.80	*11.50	*7.30	*9.19

* Four months.

Aluminum, Silver, and Antimony
Prices in May.

New York

Day.	Aluminum. Cents.	Silver. Cents.	Antimony. Cents.
1	60.00	74.87½	32.25
2	60.00	74.62½	31.50
3	60.00	75.12½	29.00
4	60.00	75.12½	26.50
5		74.87½	
7	60.00	74.75	24.50
8	60.00	74.75	23.50
9	60.00	74.75	23.00
10	60.00	74.62½	24.50
11	60.00	74.62½	25.50
12		74.87½	
14	60.00	74.87½	26.00
15	60.00	74.87½	26.00
16	60.00	74.87½	26.00
17	60.00	74.87½	25.50
18	60.00	74.62½	25.00
19		74.62½	
21	60.00	74.87½	25.00
22	60.00	74.62½	25.00
23	60.00	74.62½	24.75
24	60.00	74.62½	24.75
25	60.00	74.62½	24.75
26		74.62½	
28	60.00	74.62½	23.25
29	60.00	74.62½	23.25
31	60.00	74.87½	23.00
High	61.00	75.12½	32.50
Low	59.00	74.37½	22.50
Average	60.00	74.74½	25.57

Imports of Aluminum.

(In tons of 2,000 lbs.)

	1913.	1914.	1915.	1916.	1917.
Jan.	1,590	616	636	425	1
Feb.	996	635	291	324	14
Mar.	1,007	741	383	223	
April	1,773	678	153	406	
May	1,169	586	209	696	
June	880	548	893	325	
July	1,216	709	356	208	
Aug.	668	736	245	106	
Sept.	529	636	521	12	
Oct.	560	1,283	93	247	
Nov.	528	406	61	348	
Dec.	677	516	426	4	
Total	11,593	8,090	4,267	3,324	

Exports of Domestic Lead.

(In tons of 2,000 pounds.)

	1916	1917
Jan.	7,192	\$790,447
Feb.	10,246	1,392,624
Mar.	8,585	1,068,459
April	5,870	857,095
May	7,558	1,027,273
June	7,167	1,062,616
July	9,008	1,276,316
Aug.	7,542	995,724
Sept.	15,683	2,012,413
Oct.	9,396	1,303,934
Nov.	6,402	887,429
Dec.	5,866	833,873
Total	100,465	13,508,293

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EDITORS

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NO. 7.

The Situation

The past month has served to bring home to us what a tremendous undertaking modern warfare is, and we now have by our own experience, obtained some idea of what the Allies suddenly had to contend with when without almost a moment's warning, they were forced to instantly mobilize their resources against an enemy that had made in advance every possible preparation to the last detail. Even with all the benefit of our Allies' experience which they have placed at our disposal, the knowledge and record of the physical and economic and social difficulties which they so successfully overcame, and those that were and only are now being adjusted after grievous mistakes, we find ourselves struggling with a

situation that taxes all the patriotism and ingenuity and skill we can supply to enable us to play our part. We have under the guidance of the Executive and with the support of Congress to divert the resources of a mighty nation from the tranquil channels of peace to the rush of military preparation, and to do it in extreme haste. Everything considered what has been done has been accomplished without any great disturbance to the business or social life of the nation. Financially there has hardly been a ripple, and this is in marked contrast with the breakdown that occurred in other countries on their entry into war and which at the time also was so seriously reflected in our own country. There was no top heavy speculation or inflated values in our stock market to be liquidated, consequently the effect on our stock market was almost nil. In business generally there was at first little impression, but as time has gone on, industries likely to enter into war requirements have been greatly stimulated, while other industries that depend on ordinary domestic demand have shown a recession in their activity that had been created by the recent great prosperity. Both

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these movements are certain to grow. There must be tremendous activity in war supplies, likewise we think a curtailment in ordinary normal peace demands. We believe the country will continue prosperous, but economy must come in the individual's expenditures.

Unprepared in many other ways, we were in strong fighting shape financially, and while the present generation had grown up without any thought of being brought into a war as a possibility, still when it came, it was found that long years of peace had not destroyed the virility and manhood of our people. With little excitement, but with quiet, serious and firm determination, we have with a full realization of all that is to come in suffering and loss given up ourselves and all we have to what is before us. We have demonstrated that when a serious matter is in hand the American shows no excitement. Those who think it proceeds from indifference are going to have a rude awakening. Slow to wrath, loving peace, hating war, eager to compromise when it is possible as our daily intercourse with each other shows, when forced to take a stand, to enter war, our dominant strain of blood, our pride of nationality, our belief in our ideals and ourselves and our destiny makes the American nation a serious foe. There is no spread-eagleism or bluff when a serious matter is in hand with us. We can see this trait any time in a brawl in our streets if Americans are engaged, nothing but silence and blows. The same is true in the way we engage in the commercial undertakings that have astonished the world. We keep our brass bands and shouting for our conventions, and in that way we let off some of our pent up steam, and the same with our yellow press, it is a diversion and not to be taken seriously, or representative of the people. When anything really serious is in hand we become very sane and quiet. Our reason for dwelling on this has been because those who do not know us have seriously criticized this country in the past for our apparent indifference. We are now to show them how we can fight.

We have found it comparatively easy from our wealth to raise at short notice our largest national loan (\$2,000,-

000,000), and if necessary, the operation will be repeated again and again without distress. We have been able to at once demand and receive from our people the recognition that universal suffrage and liberty involves universal service at the demand of the State, when the occasion arises. A supreme demonstration has been made that in a republic like ours, the people being supreme, a national cause instantly becomes the personal cause of each individual, and that any obligation no matter what it costs, will be responded to body, soul and spirit, for all we have and are. So far what we have accomplished has been easy, because it has been natural. But when it comes to the ways and means to be employed we find these cannot be obtained or arranged for in a day. They are not subject to a condition of will as in the case of resolve or service or of an accumulated wealth that can at almost a moment's notice be changed from our own pockets to the coffers of the Government. Other details are what we have been struggling with in the past thirty days. How can we quickly change men into soldiers, equip, train and put them into service? How can we transport them across the ocean in safety and keep them supplied with food, ammunition and the thousands of other things necessary? How can we insure that these needs may be amply and quickly supplied and at fair prices? How can the sensational and tremendous change from peace to war be accomplished without demoralization to business and to credit, to the blood that is to be kept pumping through the arteries and body of the Nation to keep it vigorous, strong, healthful and able to perform the tremendous demand now to be made on every muscle and power it has.

In times of peace we have felt distressed and pessimistic over our leaders at the front in Washington and the legislation that seemed so open to criticism. But how trivial it all seems now in the face of the present emergency. How inspiring has been the way in which our Administration has grasped and is dealing with the overpowering amount of responsibility and work. At present, thank God, no American need apologize for his Administration, no

sneer can be made at least up to the present regarding Democracy's ability in face of a crisis. We have proven that with the situation American institutions can develop plenty of men to meet it, and with the demand will increase the supply.

But it is not all plain sailing. There are difficulties and dangers that are visible and threatening.

1st.—Wonderful as the work and progress has been on the part of the Administration there are signs of congestion from the multiplicity of the arrangements that are in process for the conduct of the war, and especially the economic end. As we write we have before us a pamphlet of the Council of National Defense alone giving no less than 151 committees and sub-committees, and with this multitude of talent and advisors progress seems to be very slow in arriving at what they are to do and how it is to be done. Also as far as we can learn the members of some of these committees seem as much in the dark as the public. Let us beware that too much regulation does not congest and paralyze the conduct of the war.

2nd. There are signs of individual views, fads and pet ideas of some in charge of affairs being brought into too great prominence for the safety of the economic conduct of the war. This is no time for the exploiting of theoretical fancies or socialistic theories, and it will be a crime if it is attempted. We trust a firm control will be kept over any such efforts.

3rd. At the present time instead of an increase in production, there is in some cases a decrease in articles absolutely necessary for the war, and with it considerable congestion. The reasons are two fold:

A—The labor situation.

B—The uncertainty with manufacturers as to what prices the Government will permit them to get for their output.

There must be no delay in solving both these questions.

Of the two the labor situation is the more dangerous. We face on this:—

The scarcity of labor to increase as our army grows.

The epidemic of strikes, and the ugly feature that in some cases they are the work of the enemy in our midst.

The falling off in the efficiency of the workman caused by the high wages they are receiving, and in consequence reduced output per individual.

The easy obtaining of the means for necessities of life has led to indolence and slackness.

Strikes must end. There must be means found to stop the situation being taken advantage of to force the domina-

tion of unions on employers. To most of the labor involved patriotism can make but a small appeal as they are in most cases not native Americans, but people who have come to our shores for the opportunities we offer.

While we are not going to permit the necessities of the Government being exploited by greedy manufacturers, it will be a calamity if in the price the Government pays and in the regulations enforced it curtails the enterprise of our manufacturers.

Production must not only be continued at its fullest capacity but it must be increased. If we do not propose that labor of workmen shall put obstacles in the way of such a result, neither must the Government by unwise or dilatory action put an obstacle in the way of the manufacturers or producers. To the patriotism of all interests must be added the stimulus of a fair profit. Uncertainty above all things should not be permitted a day longer than absolutely necessary. To win the war we need every ounce of work and effort from every man, and since the war has virtually put everything under the control of the Government, it is up to those in power to stimulate production, even if necessary in the emergency to employ a policy of extra generous treatment. We think this was one of the mistakes England made, but in her case she could turn to America. Where would our country be to-day had not our ability to produce munitions and war requirements been so greatly stimulated and increased by the action of the Allies in placing their orders at extremely profitable prices to the sellers? What they wanted they wanted quickly and in greatest possible volume, and they got it by the prices they paid, and in so doing they followed the only way to get the result. You cannot by legislation, no not even by an appeal to patriotism, get what a profit to the producer will bring. You can't exploit your Government in time of war, but also your Government if it is wise will see to it that the stimulation to production by profit to the producer is not lacking. A great deal must be done to clear up the situation in the next 30 days or it will be most serious for the economic conduct of the war.

Business Trends.

Smaller Iron Production.

Pig iron production fell off in June by more than 1,200 tons a day from the rate in May. The total was 3,270,055 tons or 109,002 tons a day, against 3,417,340 tons in May or 110,238 tons a day. Coke shortage has been a continuing factor. More furnaces are blowing with each month, though many of them are small and on July 1st 349 furnaces were in blast, representing a net gain of nine in June. Our estimate of the capacity of the furnaces active July 1st modified by the poor performance in June and the probability that coke shortages will continue to be a factor in July is 112,155 tons a day as compared with 111,704 tons a day on June 1st.

The figures for the daily average production, beginning January, 1914, are as follows, in tons of 2,240 pounds:

	1914.	1915.	1916.	1917.
Jan.	60,808	51,659	102,746	101,643
Feb.	67,455	50,823	106,456	104,473
Mar.	75,738	66,375	107,667	104,882
April	75,665	70,550	107,592	111,165
May	67,506	73,015	108,422	110,238
June	63,916	70,361	107,053	109,002
July	63,150	82,691	104,017	.....
Aug.	64,363	89,666	103,346	.....
Sept.	62,753	95,085	106,745	.....
Oct.	57,361	100,822	113,189	.....
Nov.	59,611	101,244	110,394	.....
Dec.	48,896	103,333	102,537	.....

Enormous Foreign Trade.

On the face of the May returns of exports and imports, submarine warfare has still a long way to go to stop, or even to check our trade with the rest of the world, or even with Europe, our largest customer. May exports have only twice been exceeded, and then in months of large movement, January and March, while imports reached a new high level in May. If an opinion were hazarded, indeed, it would be that the vastly higher level of all prices here and abroad has had more of a repressing effect on foreign trade, as it unquestionably has had on this country's

domestic business, than has had the submarine. The facts are that May exports of \$551,000,000 were only 10% below the high-record January total, and were 16% larger than in May, 1916, while imports were 4% greater than in March, and 22% larger than in May a year ago, and both exports and imports were double those of May, 1915. In connection with these gains over May last year, it may be noted that the general level of all commodity prices was 29% higher than a year ago on May 1. The 11 months' returns of exports show a gain of 47% over the like period a year ago, while imports show a gain of 20%; but here the gain in the price levels is found to be 23%. The fact remains, therefore, that with all the drawbacks, whether high prices, submarines, scarce vessel tonnage or any other reasons, current export trade is close to the peak point, imports are at their maximum, and the fiscal year's trade dwarfs all previous records.

Our foreign trade for May, for the 11 months ending May 31st and for the full period of the war compares as follows:

	1917.	1916.
Exports	\$551,000,000	\$474,803,637
Imports	281,000,000	229,188,957
Excess of exports	\$270,000,000	\$245,614,680

Eleven months ended May 31st.

	1917.	1916.
Exports	\$5,718,000,000	\$3,867,115,373
Imports	2,342,000,000	1,952,032,212
Exc. of exports	\$3,376,000,000	1,915,082,161

Summary of trade since the war began:

34 months—	Exports.	Imports.
Merchandise.	\$12,665,114,442	\$6,065,404,041
Gold	407,178,702	1,488,462,521
Silver	165,592,326	84,108,163
Total	\$13,237,885,470	\$7,637,974,725

New Enterprises in June.

Continued activity in the formation of new enterprises is indicated in the returns for the past month, when incorporations in the Eastern States with a capital of \$1,000,000 or over represented \$352,584,000. While this total is

Business Trends.

\$25,897,000 under that in the preceding month, which made an exceptionally good showing, it is \$87,734,000 in excess of the June figures a year ago.

The grand total of all companies chartered with \$100,000 or over, covering all States, amounted to \$423,224,000, comparing with \$327,871,000 in June a year ago, and \$230,859,000 two years ago. This showing accentuates in a striking way the prosperity that continues so much in evidence throughout the country. The outstanding feature of the returns is the varied character of the industries represented. It is plain that this Government's large and increasing demand for war supplies plays an important part in the returns.

Following are the comparative figures as specially compiled by The Journal of Commerce and Commercial Bulletin of companies incorporated in the Eastern States during the last three years, with an authorized capital of \$1,000,000 or more.

	1917.	1916.	1915.
Jan.	\$244,450,000	\$270,995,000	\$51,150,000
Feb.	283,815,000	365,995,300	53,950,000
Mar.	281,000,000	194,750,000	70,050,000
April	361,510,000	166,650,000	32,200,000
May	388,481,000	209,735,000	78,950,000
June	352,584,000	264,350,000	181,247,100
Total	\$1,911,840,000	1,372,385,300	467,547,100
July	.....	217,662,500	71,100,000
Aug.	.....	113,472,000	67,100,000
Sept.	.....	164,700,000	286,625,000
Oct.	.....	303,768,700	208,695,000
Nov.	.....	260,407,800	130,075,000
Dec.	.....	230,850,000	135,125,000

Commodity Prices at Record Level.

With a further net rise of about 2% "Bradstreet's" and "Dun's" index numbers of wholesale commodity prices attained new peak levels on June 1 last, being 15.4680 and 212.585 respectively against 15.1203 and 208.435 on May 1st. The ratio of increase as compared with June, 1916, is about 32% and comparison with the like date in 1915 reveals a

rise of about 57%. Contrast with June 1, 1914 directly prior to the European war, discloses an increase of about 79%. In England, the two leading index numbers show that in the period from the end of April to the end of May prices advanced a fraction of 1%. This development indicates a slower rate of advance in England than here. As compared with May of last year, one of the English numbers exhibits an increase of 25%, while the other shows a rise of nearly 30%. In both cases record high levels are indicated.

Barring a few minor downward swings, the broad tendency of commodity prices since the outbreak of the European war has been steadily upward, but the ascending line has been most marked since August of last year. So, it is not unnatural to ask: "Does the future hold out much encouragement for lower prices?" In reply to which "Bradstreet's" says:

"One may build some hopes on the prospect that speculation in commodities is now less likely to continue unbridled: supplies of essential soil crops will, no doubt, be more abundant, and fears entertained by a large part of the public of the deprivation of foodstuffs have waned, while in all probability the tendency to economize will reduce consumptive requirements. Thus, the ebb tide seems to be running toward cheaper food products, and, in passing, it may be noted that extremely high prices have unearthed, as it were, quantities of canned goods that were not supposed to be in existence. On the other hand, it is hard to read out of the conditions much hope for lower prices on leading manufactured articles, demand for which is insatiable. Indeed, it is known that the various producing units have been unable to make up stocks in sufficient quantities to supply urgent calls, and even if high prices have deterred ordinary domestic consumers from buying, purchases made by our Government, added to those of our Allies, have taken up any slack that may have accrued from the denial practiced by home consumers."

Railways and War.

Organization of Railways of the United States for War—Railways a Vital Factor—Canadian and British Work—"Railways Won Battle of the Marne."—General Joffre.

A magnificent number, dealing with railways in connection with war problems, was issued by the Railway Age Gazette as its weekly number of June 22nd, there being 200 pages of illustrated reading matter. Only a brief review can be given of a few of the many interesting articles.

Organization for War.

The work really began in May, 1914, in connection with possible movements to the Mexican border, the American Railway Association designating a member of its executive committee to be at the service of the quartermaster general. On October 26, 1915, the Secretary of War suggested that the American Railway Association establish a committee to whom the War Department could look for information, this resulting in the Committee on Co-operation with the Military Authorities, Fairfax Harrison, president of the Southern Railway, chairman; R. H. Aishton, now president of the Chicago & Northwestern, W. G. Besler, president of the Central Railroad of New Jersey, and A. W. Thompson, vice-president of the Baltimore & Ohio. The work of this committee in the summer of 1916 was highly commended by the President and the War Department.

The Council of National Defense, composed of Cabinet officials, and its Advisory Commission, composed of seven civilians, were authorized in the military appropriation bill passed in the summer of 1916. Daniel Willard, president of the Baltimore & Ohio, was appointed by the President as a member of the Advisory Commission and was designated as chairman of a committee on transportation and communication. Later he was made chairman of the Advisory Commission. The Executive Committee of the American Railway Association on February 16, 1917, enlarged its Special Committee on Co-operation with the Military Authorities to 18 members and designated it

the Special Committee on National Defense, and this committee has since been enlarged to 33 members, divided into six departments corresponding with the military departments of the army. The Executive Committee, now generally known as the Railroad War Board, was created at a meeting of the executive officials of the railways called by Mr. Willard for April 11th. This meeting passed a resolution that the railroads, asking through their officials assembled, pledge themselves to each other and with the Government of the United States and the governments of the several states to co-ordinate their roads as a continental railway system, during the war "in the effort to produce a maximum of national transportation efficiency" agreeing to create an organization to formulate in detail a policy of operation. Various sub-committees were formed, and a building in Washington was leased for the work. The Commission on Car Service of the American Railway Association, became a sub-committee, thus having in addition to its original authority also the full authority vested in the Railroad War Board.

In Great Britain.

Prior to the war the chief co-ordination with British railways was through the Railway Clearing House, by which rates, demurrage, compensation for accidents, etc., were taken care of to the elimination of competition, but there had been strong competition, by way of canvassing, establishment of crack trains, etc., which encouraged the formation of alliances calculated to pool competitive traffic, etc., to the reduction of competition within certain groups of roads. There were numerous special and general Acts of Parliament, some of the powers being exercised by the Board of Trade and the Railway Commissioners.

Several years prior to the war the War Office had appointed an advisory

committee composed of a few railway general managers, to consider troop movements, etc. In August, 1914, the Government announced its intention to take temporary possession of the railways under the Regulation of Forces Act of 1861, the control being given to this committee, known as the Railway Executive Committee, under the nominal chairmanship of the president of the Board of Trade and the active chairmanship of the general manager of the London & Southwestern. The question of compensation was settled by the Government guaranteeing the financial status of the last full year before the war, 1913, with provision for expenditures for maintenance, etc., deferred on account of the war, and the railways undertook to convey all military traffic free of charge.

Free from the need to make money or compete, the railroads reduced their schedules, closed stations and sections of lines, prohibited various pleasure parties, advanced passenger fares 50% and in various ways reduced the ordinary traffic.

Canadian Railways.

At the beginning of the war Canadian railways were suffering from over-expansion and dullness in business. They have since become very busy and have suffered from a lack of men, many of their employes having enlisted 6,692 of the Canadian Pacific up to May of this year, 3,342 of the Grand Trunk up to April, and proportionately from other roads.

Because of inadequacy of transportation facilities in France the British Gov-

ernment requested Canada to do what it could to supply rails and track material. In December, 1916, a Dominion order in council was issued authorizing the National Transcontinental Railway to ship abroad 300 miles of rails with the turnouts, track material, etc., and now 300 miles of track in addition are to be sent. At first the railway shops were not busy and did much work making munitions but as their normal work increased this has been transferred to private munitions factories.

In France.

Daniel Willard quotes General Joffre, the "hero of the Marne": "This is a railway war. The battle of the Marne was won by the railways of France." That was at the beginning, the General referring to the quick movement of troops and supplies.

The usual light railway as used behind the lines in France is 60 cm. (1 ft. 11 $\frac{5}{8}$ in.) gauge, with rails about 20 pounds per yard, with ties weighing about 20 pounds, all put together in various lengths and with curves, turntables, etc. Sometimes, at the front, they run underground.

Italy found fortress trains very effective for coast defense and is now providing many for use on the Austrian frontier. One of the difficulties in shooting is that the enemy can shoot also, hence concealment is desirable, and the railroad has furnished means for rapidly shifting a piece once it is discovered by the enemy. At Verdun the use of fortress trains was very general, and the use has since been extended.

Can Peace Uses Consume War Steel?

(By Ray Vance, Director of the Brookmire Economic Service, Inc.)

How Much War Steel is Produced?

The answer to the above question depends very much on what is meant by "war steel". The phrase is used with a variety of meanings, which range all the way from a maximum which takes all the increase in steel production that has occurred throughout the world since 1914, to another minimum meaning which takes into consideration only that tonnage of steel used by armies and navies. As a matter of fact, there is no close line of demarcation between "war steel" and "peace steel" for almost every line of steel consumption at the present time has a direct or indirect relation to military or naval activities. The question might, therefore, more accurately be stated: has the impulse of war demand produced an expansion of steel capacity greater than can be utilized for the purposes of peace?

Regarding the producing capacity of the German Empire, which is one of the world's three great steel producers, we have had no authentic information for nearly three years, but it is plain that Germany alone has been able to trade very nearly shot for shot with the entire outside world, and it is impossible to believe that her producing capacity is not as large or larger than it was before the war broke out.

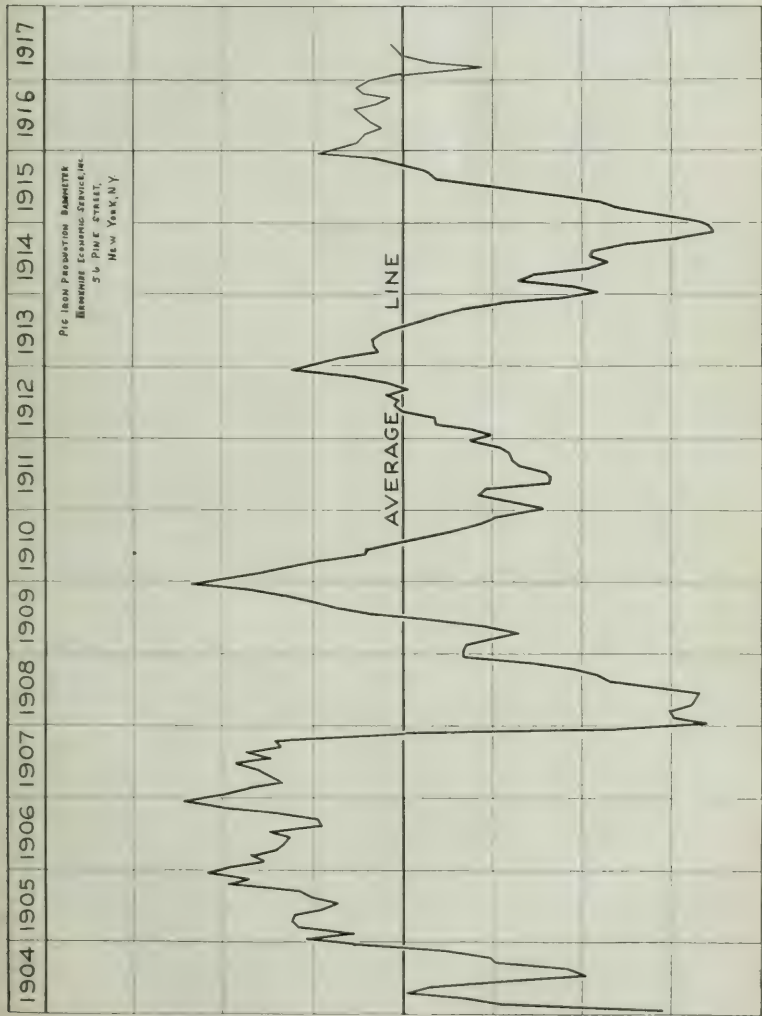
Even in Great Britain, with which we have unrestricted physical communication since the opening of the war, the military censorship regarding the production of munitions throws something of a shadow over just what has happened to the producing capacity for steel. It is estimated, however, by officials in England, that in 1917, production of steel in Great Britain will establish a new record in amount.

It is certain that the pig iron production in the United States established a new high record in 1916, nearly 9,000,000 tons, or 30% higher than the

best record prior to the beginning of the European War, and very nearly twice as high as 1914.

When all records are considered together, the "American Metal Market" has estimated that the world's production of pig iron in 1916 was about 6% smaller than in 1913, and when it is considered that the United States so far in 1917 is running a little behind 1916 figures, it is not likely that any expansion in Great Britain or Germany will bring the world's 1917 pig iron production any higher than it was in 1913, the last year of large production before the war began. When this fact is taken in connection with the other fact that the world's pig iron production and consumption have a constantly increasing tendency, it becomes still more apparent that whatever "war steel" is being consumed in the world at the present time does not come from any new sources of production, but rather has been temporarily taken away from normal peace purposes and diverted into war uses. Even in the United States where we hear so much about exceptional increases in production, the expansion has only been a return to our normal growth rather than any abnormal development such as has occurred in the iron and steel prices. This is shown by the accompanying chart, which graphically portrays the production of pig iron after a mathematical calculation has been made to eliminate the tendency toward normal growth and the seasonal fluctuations of different months. Surely, this does not indicate any abnormal expansion at the present time such as occurred in 1905, 1906 and 1907, and we may safely confine our inquiry to the question—Will the world be able to turn this iron and steel to peace uses when the war is over, or shall we be compelled to wait for years of readjustment while consumption again overtakes production?

A graphic of pig iron production from which seasonal fluctuations and normal increases have been mathematically eliminated.



What Peace Uses Have Been Suspended?

Since there have been no great increases in the world's production of steel, it is plain that the tremendous supplies for war use have been secured through a decrease of ordinary peace consumption. In the warring European countries, this peace consumption has been reduced to a minimum in all lines, and even in the United States we find some of the great lines of steel consuming activities at an extremely low ebb. For instance, the following table, which shows the railroad construction work in 1915 and 1916, indicates where part of the steel has come from.

Railroad Construction, 1913 and 1916.

	1913.	1916.	Decrease.
Locomotives	5,332	4,075	1,257
Passenger cars	3,296	1,939	1,357
Freight cars	207,684	135,001	72,683
New track miles	4,467	1,410	3,057

Similarly, building operations of all kinds in the United States have been below normal in every month except one since the European War opened, and at the present time the Brookmire Barometer Chart of Building Permits stands 80 degrees below normal, which is a new low record since 1900. In general, we might sum up the source from which "war steel" has been derived by saying there has been a world-wide suspension of new construction and development work waiting for the time when the competition of military buying shall have become sufficiently small to permit these developments to go forward with a reasonable hope of future profits. The steel trade after the war depends entirely on how rapidly this demand can be resuscitated when peace conditions return.

An Illustration From the Past.

The closest parallel to this situation for which it is possible to get figures is the condition in the United States at the close of the Civil War. In 1864, pig iron production in the United States had just made a new high record, and prices were not only at a level never before heard of, but nearly one-half of the expansion toward that level had occurred between the beginning of 1863

and the middle of 1864. As at the present time, new construction had been very nearly brought to a standstill, and a great potential demand existed, waiting for the cessation of war competition.

A further close parallel is suggested by the fact that a great stretch of virgin territory was just ready to be developed with railroad building in the United States in much the same way that the great Russian territories stand ready to be developed at the present time. The parallel is not perfect because the destruction of capital and the pause in new development was not so general through the war as at the present time, and it is also true that with modern organization of banking and transportation, commercial changes occur more rapidly.

It is significant, however, that the year following the war was one of great reaction in the United States iron trade; production decreasing 18%, while price decreased 20%. When we take the longer range view, however, the showing is decidedly reversed. It is true that pig iron prices declined steadily until after the panic of 1873, and that until the present time they have never again approximated the levels reached in 1864. No process of reasoning can give us a sound basis for expecting current prices for iron and steel to become a normal part of our business organization, but production should increase very quickly. In 1866, the pig iron output of the United States was nearly 20% larger than in 1864, and without a single year of reaction, to 1873 the total production had increased 150%, in spite of the fact that the country continually had an unsound financial basis and was steadily tending toward one of the worst financial panics in our history.

A Little Prophecy.

It would be foolish to attempt any positive prophecy regarding the condition of steel production after the war until we know something more about when and how the war is to end. Possibly the safest single statement to be made is that iron and steel prices must have a very severe reaction when peace

comes, and that the normal level of future years will be far below the present. Next to that, the most certain development seems to be a short period of severe depression in demand and in production, until consumption can be readjusted to a peace basis.

When once those two pessimistic factors have been admitted, however, the lessons of the past indicate that we may consider whatever expansion of steel producing capacity has occurred in the

United States during the war not as an abnormal over-development, but rather as one of the regular steps in normal growth, and that five or ten years after the war has closed, we shall make our comparisons with the production of 1916 and 1917 with allowances for great normal growth in the meantime, just as we now are compelled to make such allowances in comparing with the records of 1906 and 1907.

Winning the War.

It might not be out of place to focus more attention upon the fact that the army at home that is helping to win the war is in much the same position as the army in the field, in that the private, or even the petty officer, does not know much of what is going on, but has confidence in the officers in command, and is trained to obey and not expect explanations.

It required no effort for these principles to be established as to an army in the field. In this modern warfare, when so much depends upon the work done at home, there is no reason why the principle should not apply. It is out of the question for those who are doing things to take time to explain to the public what is being done. The public is supposed to help.

Some marvels of speed and efficiency have occurred in what has been done already in troop movements, in erection of quarters for men and in the placing of orders for supplies. There is no time for all this to be detailed. The work is going on, despite the confusion, appearing like chaos to some, with a precision and celerity that would not have been dreamed possible a year ago. Of course there is apparent disorder and some conflict, but there is

the same thing, and much more, in many of the army maneuvers. Only the officers high up realize just what is being done, and the plans generally bring the desired movement, despite what appears, in detail, to be confusion.

What is likely to delude the ordinary observer, pursuing the comparison of the army in the field and the army working at home, to marshall all our material resources to the prosecution of the war, is that in the accounts of military movements we are given only the grand results, the reports having no time for describing the petty annoyances and cases of confusion that are inseparable from the great movements, whereas in the workings of this army at home what we see is largely the friction and confusion, in detail, and what we do not see is the grand results of the whole operation. Much is suppressed for military reasons, and much of it does not get out because there is no surplus time or energy to tell about it.

What the industrial army at home needs to do is to work efficiently and try to emulate the example of the soldier in the field, who has confidence in his officers. He has no recourse but to do so. Neither have we!

How Great Britain is Meeting the Labor Problem.

Rt. Hon. John Hodge, M. P., British Minister for Labor Tells American Manufacturers the Lessons the War Has Taught His Country About Handling Employees.

Hundreds of thousands of men called to the front—immigration at a low ebb—huge government orders marked "rush"—the farms under pressure, surely, if we ever needed anything in business, we need to-day information on how the nations over the ocean, which have had several years to struggle with this very problem, are managing. And who could help us more, among all their men who know most about this particular subject, than the Minister for Labor in the English Cabinet?

We have obtained permission to reproduce the following article that was written for "Factory" for July, and believe it should be carefully read by employers of labor, to help us in avoiding some of the expensive mistakes made by England early in the war.

As soon as it was realized that the war was going to be a war of material, and that this government was short of guns and shells, the government decided to create a new department called the Ministry of Munitions, of which Mr. Lloyd George, on account of his inspiring personality and organizing ability, was selected to take charge.

The first action that he took was to convene a conference of all the leading trade union officials in the country. At that conference he took the delegates into his confidence and explained to them very fully many things which could not possibly be published to the world at large.

To them he put forward the proposal that, the crisis being so grave, trade unionists should give up some of the customs, privileges and conditions of employment which they had been fighting to obtain for the past hundred years. On behalf of the Government he gave them to understand that when peace was declared every condition, custom or privilege of labor should be restored to its old footing.

The delegates agreed almost unanimously to the suggestions made by Mr. Lloyd George, and those who voted against them did so because they could not commit themselves without consulting their management committees. When the delegates reported to their respective organizations, I do not know of a single instance in which the proposal was rejected.

It may be well to name the concessions made by labor:

(a) They permitted what is commonly known as dilution of labor. A fitter or engineer now simply acts as supervisor; keeping the tools in good condition and teaching the unskilled and semi-skilled men how to operate the machines.

(b) They annulled all restrictions respecting overtime.

(c) They annulled all restrictions on working machinery to its utmost capacity, and other similar practices.

(d) They agreed to work on Sundays when necessary.

(e) They gave up all holidays as desired.

(f) They admitted women to a great many occupations in which their presence had hitherto been objected to by both workmen and employers.

Inevitably the development of shell and gun output, the great new program for the building of warships, aeroplanes, and merchant vessels, and recruiting for the new armies brought about a great shortage of labor. It was foreseen that a natural consequence of this would be great competition among employers for all available skilled workmen, and consequently tend toward highly inflated wage rates.

In order to prevent an uneconomic transference of labor as a result of the inducement of inflated rates of wages, consequent on a shortage of labor, it

was decided that no man should be enabled to leave one employer and go to another without a leaving certificate from the first employer. If that was refused, the workman was given the right to appeal to a tribunal, which would then decide whether his claim was legitimate or not.

If the services of a workman employed at any given establishment could be utilized to greater advantage at another, the Munitions Department reserved the right to transfer him without the consent of his employer.

There was no difficulty in getting labor to agree to these conditions, because of the great enthusiasm for the war, and, consequently, no propaganda meetings were necessary.

The great difficulty was to persuade some of the trades to open their doors to women. The objection of the workmen to the employment of women was that employers as a whole never employ a woman unless they can get her at lower wages than a man. The workmen naturally said, "If we permit women to come in under these conditions what will happen to us after the war? Women will be kept because they are cheap and men will not be wanted."

The result was an agreement between the government and the trades unions, that if women were admitted to these trades, they should receive the same piece-work rates as men, and if paid by time-rates, adult women workers must receive a minimum of \$5.00 a week. That being so, when peace comes, there is no danger of the employer trying to keep women in the place of men.

It was difficult to get the employer to accept women on these terms; probably simply because they were women. The innovation necessarily caused expenditure. On introducing female labor into a factory for the first time it is necessary to provide separate lavatory and cloak-room accommodation, and to appoint women supervisors. There are always a certain number of rough-spoken, ill-mannered men in a factory, and it is necessary to protect the women against them.

When the women were worked for the regular hours of men it was found that irregular attendance resulted and the output of the women decreased.

The welfare department of the Ministry of Munitions, with the help of Sir George Newman, very quickly realized that it was necessary to make some difference in factory conditions where women were employed.

They, therefore, instituted rest periods of a quarter of an hour in the morning, when the young women could get a glass of milk, or a cup of tea or coffee. For the last ten minutes, wherever possible, the girls were asked to lie down flat on their backs. This relieved the tension on the muscles which had been strained by long standing at a machine. These rest periods were repeated in the afternoon, with the result that the output was maintained. As a matter of fact, the two intervals had a marked effect, in increased output and more regular attendance.

Women Supervisors Look After the Welfare of Women Workers.

A woman supervisor, has, as already indicated, been appointed in every factory: where there are a great many women employees there is more than one. The women go to this woman supervisor with all their troubles. If they have a cut finger or meet with any minor accident, they go to her or to the medical room for first aid. If a woman feels faint, the woman supervisor sends her to a rest room, where she is looked after by a trained nurse, who decides whether she will be fit for work in an hour or two, or whether she should go home for the remainder of the day. This applies to all of the 6,000 government controlled establishments where women are employed.

As many of the girls employed came from long distances, and in a number of cases it was not possible for them to obtain food near the factories, canteens were erected in almost all of the factories or work shops. The woman supervisor looks after the food in these canteens and sees that it is maintained up to the standard.

This general welfare work was found to be such a success among women that the authorities decided it could not be bad for boys. So in a great many establishments boys are now being looked after in the same way.

In the matter of feeding, the same

problem confronted both men and women workers very often. Thousands of men were brought together from all over the country and factories were developed for the making of munitions beyond all imagination. It was necessary to feed these men in order to get good results. And where men are well fed, there is generally much less tendency to drink.

The government therefore urged upon all establishments the necessity for opening canteens where proper feeding arrangements were not supplied. Of course, there was much prejudice to overcome, but this the government met by paying a proportion of the cost of the erection of canteens, dealing with each case on its merits in deciding this proportion.

After the war, the canteen system will stay, because employers have come to realize, as they did long ago in America, that it is profitable. Instead of having a dry meal with a can of cold tea, the workman goes to the canteen and gets a regular hot meal, and his output and general effectiveness are improved in consequence.

During the first 12 months of the war we had no great difficulty in getting labor to keep up the long hours, continual overtime, and absence of holidays. In fact, I may say that it is only during the last six or eight months that any trouble has arisen, from a variety of reasons, chief among which are the increased cost of living, wages not keeping pace with this, sometimes delays in dealing with differences, the long hours, monotonous toil over so long a period, and no holidays. These all contribute to a feeling of irritation which magnifies the little difficulties which come up until they assume big proportions.

The Labor Ministry Smooths Out Friction Between Employer and Employee.

The Labor Ministry was formed by Mr. Lloyd George to meet these deficiencies when he reconstituted the Cabinet in December, 1916. Our function is to act as intermediaries between the government and labor, between employer and employee upon occasion, and particularly between the Ministry of Munitions and labor. It is our business

to make the vast industrial machine run smoothly, insofar as the better understanding of and consideration for labor can aid in this direction.

When I came in here I found that delay was one of the dangers at the root of such labor troubles as we have had. These delays will now be a thing of the past, so far as this department is concerned.

The Munitions Act provides that if any labor dispute lasts longer than 21 days without reaching a settlement, it must go before an arbitration board. But a great source of trouble has been the slowness of the arbitral machine. It has failed to see that delays cause irritation and are very dangerous. As a matter of fact, the whole of the recent trouble in Newcastle, when the engineering trade demanded an increase in wages, was due to the fact that the proceedings of this board were most unduly protracted and it took nearly five months to come to a decision.

Steps have now been taken to prevent that sort of occurrence—that is where the Ministry of Labor comes in. Ever since I came in here I have been working to get the machine expedited. One of the first things I did was to substitute national settlements for the local decisions.

For instance, on the first of April there was a general advance of 5s (\$1.20) a week in the shipbuilding and engineering trades that operated over the whole of the United Kingdom. This disposes of the whole trade at one swoop, instead of leaving perhaps a hundred different claims to be dealt with from time to time as they come up.

Another means of speeding up the arbitration of these labor claims has been the formation of tribunals of three, composed of a neutral chairman, a representative workman, and a representative employer. The workman is not necessarily a trade union official: he may be taken from the rank and file. The advantage of having a workman and an employer on the tribunal is that they have a technical knowledge of the trade and are able to give an intelligent decision. You will understand that if the subject under discussion turns on some technical point a tribu-

al of laymen will frequently fail to grasp it.

Before becoming Minister when the Ministry of Munitions wished to get the employees of some particular factory to work on Saturday afternoon, or on Sunday, I wrote to them and said, "Your firm is very anxious to work through next week end, because somebody is wanting steel for some particular purpose (and I stated the purpose)." Then I followed by saying, "I know that it is quite unnecessary to advise you men to do this, all of you have sons and brothers and pals in the trenches, and every extra shell and extra gun you can help turn out may be the means of saving some of their lives."

It is not necessary to make a demand. I got the answer back, "Of course we'll do it." And it gets done.

In the steel and iron trades there will be no trouble or disturbance of any kind after the war because we have made good in every respect and the employees fully appreciate it.

In this country the war has leveled the existing class distinctions to a very great extent.

As an example, some few weeks ago I was the principal guest of the Associated Chambers of Commerce. In speaking to them the first thing I said was that the age of miracles was not yet past. Before the war they would as soon have thought of inviting the Archangel Gabriel to be their principal guest as of inviting a labor member.

Where a new industry springs up rapidly in any country, there is always the danger that large bodies of men may have to be handled by inexperienced managers who will cause trouble simply through their lack of knowledge of human nature in the mass. In this country we have overcome this difficulty by developing our existing establishments.

Supervision of Men Was Intrusted to Those With Experience.

The only new concern that we have instituted are shell-filling factories, although, of course, the government has erected a number of national shell-making establishments. In these cases the managers appointed were men who had

been with existing firms and who were accustomed to handling large bodies of men. The danger of putting men who were not masters of the art of handling men in control of new factories was realized.

I was on the board of directors of one of these national factories. All of the board were selected as practical men, and at the beginning we met two or three times a week and went round the works with the manager after each meeting. If a man could not come to a satisfactory arrangement on any matter with the manager, he was always referred to us.

From the very beginning there was not a single labor trouble beyond the usual administrative difficulties. Of course there were occasional disputes between the managers and individual gangs of men or gangs of women working with a skilled man, as to what rates should be paid. But in every instance we were able to settle the matter satisfactorily.

The directors being in such close touch with the factory everything went very smoothly. When we started we had a plant for making 500 shells a week; at the end of the month we were making 800 instead of 500, and this ratio of actual output to alleged plant capacity has always been kept up.

Where you have peace and contentment among the workers, output goes up. In the course of time the factory of which I am speaking developed until it was turning out 15,000 shells per week with a plant that was designed to turn out 10,000.

The manager was always ready and willing to confer with any of his people who had a grievance to air and to apply an immediate remedy if possible. If the manager could not come to any satisfactory arrangement with the workers, they were allowed to appeal to the directors, and even if the directors thought that the grievance had no foundation, the very fact that they had been able to appeal and obtain a fair hearing of their side of the controversy in practically all cases gave satisfaction to the workers.

Of course, many trades have been very hard hit by the restriction which the government has been obliged to put

upon exports. In the tin plate trade, for instance, exports to Holland, Denmark, Norway and Sweden had to be prohibited, unless a license had been obtained, because the tin plate was finding its way to Germany. But, at the same time, there was a tremendous demand for steel. So everything possible was done to lay down new plants and to expedite production in the steel and iron trades.

Therefore, with the officials of the Steel Workers' Union, I helped to mobilize the idle tin platers for employment in steel works. In addition to that, some of them were drafted to armament factories which were enlarging their shell forging departments, and, consequently, required skilled men to take charge of the heating of steel. In this way we found occupation for about 1,200 of these men, with great benefit to shell production; for, being skilled workers, they caused fewer breakages and less waste.

Other trades have helped in transferring men from place to place to suit national necessity in practically the same way.

Married Workers Sent Away From Home Receive An Allowance.

At this time (autumn of 1916) it was pointed out to the Ministry of Munitions that, when a man is transferred from one district to another he cannot afford to keep two homes on his ordinary pay. Such men were, therefore, made war volunteers, signing an undertaking to go wherever they were asked. For this they were paid either the rate of wages they received at home, or the rate prevalent in the district to which they were sent; always receiving the higher rate.

In addition to this a sustenance allowance of 17s 6d (\$4.20) a week was made to each married man, and to each unmarried man who was the only son of a widow. The single man with no dependents received no allowance, as expenses were no different for him whether he was in lodgings in Scotland or in Wales.

We hear a great deal of loose talk about the return of trade union customs and privileges after the war. But labor cannot have it both ways. As I have

said to men frequently: "You can not maintain your high wage and, at the same time, go back to your old restrictive customs. If going back means returning to pre-war conditions it means going back to pre-war wages. It is impossible to go back to pre-war conditions because the cost of living will be high for some time after the war, and higher wages will be required to cope with it." But there will be no difficulties if the employer will play the game.

In this country, employers have never been so alive to the value of unrestricted output as in America. The up-to-date American employer never thinks of cutting a piece rate on work once it is fixed.

Here, immediately the employer thinks his men are making too much money, piece rates are cut. Therefore the men practice restriction in order to evade rate cutting. The employer has got to stop that.

However, let me say that the iron and steel trades of this country have acted upon American principles. The rates once fixed have never been changed. The result has been that restriction has never been practiced, because there is mutual trust and confidence between the employer and his workers.

Lessons Taught by Three Years of War.

These three years of war have driven certain conclusions home upon me, and I believe, upon many others, both employer and labor men in this country. The first of these is that labor must give up its old restrictive attitude. The second is that capital must become willing liberally to remunerate any extra effort and extra exertion on the part of labor.

For any modern nation can only reach the maximum amount of wealth and happiness by producing the maximum amount of goods. War experience has opened our eyes to what we can do in Great Britain. We shall not readily forget the lesson.

We realize now that capital must work with labor and labor with capital. There will be no room for strife between these two complementary forces, if we are to succeed in the industrial campaign of to-morrow. And in order

to get labor's cordial co-operation, the lessons of this Ministry have to be taken to heart by employers.

Labor must be called into the council of directors of every great firm. Decisions affecting labor, must be taken after, not before, discussion with labor's direct representatives of the probable results of such decisions.

I believe that in this country we are, in certain trades at least, on the brink of a splendid new harmony between capital and labor. May the same happy issue be reached in America, when employer and employed have been drawn close together through the fiery ordeal of war.

The Fear of Autocracy and Socialism.

Fears are being expressed in some quarters that our organization for war is leading us into too autocratic methods, also into "socialistic" practices, which it may be difficult for us to shake off when the war is over.

These feelings are perfectly natural in the circumstances but it is necessary to be practical. As one of the practical civilians at Washington has said: "The thing to do is to win the war. Nothing else counts."

From the practical standpoint it is well to note that we have had these same pleas with us for years, and have done nothing to check the trends that were complained of. We have always been asserting that too much power was being given to the President but we have never seen the President who has been given less power than his predecessor. If we could not rectify the situation in times of peace, or did not care enough to try, how can we have time and energy to try now? As to "socialistic", what is so called at one time has come to seem perfectly natural a few years later. Socialistic practices, fitted in with existing things, are quite different from a complete scheme suddenly forced, which is doctrine of the socialists.

Winning the war is a big task, especially when the task is to get into the thick of it as hard and as quickly as possible, for the purpose of saving lives and money. If we can do that we

should surely be equal to the task of readjustment after peace is assured. We do not hesitate to pile up a money debt to be paid in future, and we should hardly hesitate to leave a debt of work to be discharged after the war. Let us avoid autocracy and socialistic practices as much as we can, but we cannot afford to risk prolonging the war by refusing to adopt measures that promise good results, even though they leave a heritage of work to be done afterwards in readjusting matters.

COAL PRODUCTION

The production of bituminous coal in the first half of 1917 was fully 270,000,000 short tons, as stated by Hon. Franklin K. Lane, Secretary of the Interior, in his address to the coal operators assembled in Washington June 26th to consider the fixing of a uniform, and lower price, on bituminous coal.

According to the experts of the United States Geological Survey this output was 20,000,000 tons in excess of the output in the first half of 1916. Mr. Lane held that the railroads would be able to handle coal shipments much more expeditiously in the second half of this year than they did in the first half, as, particularly in the early months of the year they suffered very seriously from congestion. The output in May exceeded all previous rates, and June showed a still higher rate.

The Army Cantonments.

The army cantonments represent 16 cities of 40,000 population each. All the contracts were let before the end of June, one contractor for each. The contractors, one for each cantonment, were selected by an expert with confidential information, a statement from each contractor as to the work he had done in the past three years, and statements from engineers giving their knowledge as to the ability and integrity of the contractor. The fees are 10% on contracts of \$100,000 or less, scaling down to 6% on more than \$3,500,000, with an upset limit of \$250,000, the fee including overhead, which is estimated to average 3½%, more on the small contracts and less on the large.

Each cantonment will occupy from 1,500 to 3,000 acres, including rifle ranges, maneuvering space and parade grounds, with about 1,000 houses. The ordinary house will be two-story frame covered with matched boards and

roofed with prepared roofing. All will be electric lighted. The southern cantonments will be heated by stoves, the northern probably by steam. Each barracks will contain its mess hall and kitchen.

Estimates for a cantonment include 26,000,000 board feet of lumber or 1,325 carloads, 812 carloads of crushed stone for roadways, five miles of railroad sidings and spurs, 20 carloads of nails and hardware, 20 carloads of plumbing fixtures and piping, and so on.

The cantonments are to be built in two months, seemingly an impossibility, but very rapid work has been done of late in other war work. The Quartermaster's Department received instructions on May 14 to have ready by June 15 quarters for 150,000 men, involving erection at nine posts aggregating a cost of \$7,000,000, and this work was practically completed a few days before the end of June.

Building the Aircraft.

At the close of the 1915 campaign it appeared to many observers that the outcome of the war would probably be determined in the air. The armies had well entrenched themselves. No great naval battle seemed probable. The submarine had done very little. Both sides were devoting much energy to the building of air craft. These could not entrench themselves. There could be no deadlock for any length of time. Submarines cannot well find each other and are ill adapted to fight their kind when they do meet, while as to air craft those conditions are altogether reversed.

Conditions to-day largely bear out the appraisement mentioned, but the degree of preponderance required proves much greater than would have been expected, seeing that the Entente Allies are understood to outnumber the enemy four to one, and yet this mere-

ly gives them an advantage, but it has shown clearly that complete mastery of the air would prove of the greatest importance.

To furnish this additional preponderance is one of the tasks of the United States. The President has formally approved plans which call for an appropriation of \$600,000,000 for an enormous airplane fleet. Aircraft manufacture in the United States, as developed during the war, is quite insufficient, though it is a large industry, and the automobile industry is being marshalled. A combination has been effected between the Curtiss Aeroplane & Motor Corporation and the Willys-Overland interests. Mr. Willys has been elected president of the Curtiss Company, and his own company will build factories in Toledo at a cost, including equipment, of \$3,000,000, to make aeroplane motors. The Nordyke

& Marmon Company will build a one-story factory 100x350 feet, to be completed in 60 days, providing additional facilities for making airplane engines for the Government. The General Vehicle Company is now at work on air-

plane motors. The Duesendorf Motors Corporation is now making airplane motors at its Edgewater, N. J., works, and is building another plant at Elizabeth, N. J.

Iron and Steel Price Fixing by Government.

In the discussion whether the Government will, or should, regulate prices in the iron and steel industry too much stress is being laid upon the argument that it would be "impossible" or "difficult" for the Government to do this. It is a condition and not a theory that confronts us and all such brush should be cleared away. There were many who believed a war in Europe was impossible. There were many who believed it impossible that we should enter the war. There have been some who believed it impossible that Germany could hold out long. These apparently impossible things have occurred.

If one wants to talk of impossibilities, it is impossible that business should continue under present circumstances. It is impossible that the ordinary consumer should pay, for the bulk of his requirements, the prices for steel products now quoted as the market. The large steel mills are earning over \$100,000,000 a month, delivering steel at an average price of about three cents a pound, while the present market is about six cents. If the time should come when the mills received six cents a pound they would make \$250,000,000 or more per month, minus an allowance for reduced profits on the portion furnished the government. That allowance does not affect the argument, for the ordinary consumer would be paying at the rate indicated. The people, of course, could not afford to pay. Something would break.

It is certainly unwise to let the market ride for a fall, for everyone would be injured more or less. Government price fixing may be difficult but it

would not be as bad as what is confronting us now.

The argument that large profits should be countenanced because excess profits are going to be taxed is fair if it be used in the light of reason. It would not be fair in case the price the ordinary consumer had to pay for steel were such that he would have nothing left with which to pay taxes. What is desirable is prosperity in all quarters, so that all may pay taxes.

The idea that steel should be sold the Government at low prices and ordinary consumers should pay correspondingly high prices is altogether impractical. We are pledged to throw all our resources into the war, and that is no idle phrase. There is very little steel used for pleasure. The poor pleasure automobile is being worked to death these days. One would suppose every automobile had several tons of steel in it. Our industrial and agricultural activity rests largely on steel, for the farm, the railway and the factory.

Of course price regulation would be likely to result in inequalities. The steel mills have been making large profits for a long time and have accumulated surpluses. Many of the blast furnaces have been losing money more or less regularly because the advance in the pig iron market came so recently. At reasonable prices for raw materials and present market prices for pig iron a blast furnace would pay for itself every month or two and it would be rather awkward for this brilliant future to be cut off when the furnaces have had practically no past.

The War and British Trade.

The departures from the normal which have taken place in our trade methods, transportation and industrial and fiscal arrangements, have been stupendous. As showing the wide sweeping changes which have occurred in labor matters, it is only necessary to indicate that about 950,000 women are now performing work which, prior to the war, was done by men. A few years ago any attempt to have introduced a thousandth part of this number would have led to little short of an industrial revolution. Who could have imagined that the prices of commodities essential to our domestic and business life, such as cereal foodstuffs, meat, tea, sugar, textiles, minerals, rubber, timber, oil and other commodities, would have more than doubled since July 1914? Even now they are still rising, and yet mob law and the disorder which accompanies it—and which has been much in evidence at previous stages in our history, with less provocation—is conspicuous by its absence. The nation has pursued the tenor of its way with an evenness and self-repression, which has brought out some of the best characteristics in the British temperament. In the main, despite the unrest in certain departments of industry, the workers of the country have loyally responded to the exacting calls made upon them. In 1915 we produced 253,000,000 tons of coal. We increased this quantity in 1916 by no less than 3,000,000 tons, and this in spite of the shortage of labor. The intenser application to work has enabled the Board of Trade to place on record that the average number of days worked in the pits per week has never been exceeded, or, in fact, equalled. The workers, it is true, have had their pound of flesh in the shape of increased wages, and at the close of last year some 6,000,000 operatives had participated in this augmented remuneration which averaged, perhaps, 6s per head, per week, with 10s to 12s for workers concerned with war supplies. Fortunately non-employment practically does not exist, the percentage of idle workmen at the end of last year being the

lowest in our annals.

The constancy of employment finds a pleasing reflex in the volume of our foreign trade which is, perhaps, the best index of whether the nation is conducting itself as it should under the stress and strain of a terrible war. During 1916 we imported food and drink, raw materials and manufactured articles to the value of 950 millions sterling. In 1915 the total was 852 millions. Our exports in 1916 amounted to 507 millions, against 385 millions in the previous year, so that while our imports increased by 11.4% our exports mounted by 31.6%. Very illuminating are the details of these imports and exports, and especially the figures showing the trade conducted with neutral countries. In the following list we give the imports in millions, and for comparative purposes we include our trade with the United States:

— Imports —			
Country.	1914.	1915.	1916.
Sweden	14	20	21
Norway	73½	133½	168½
Denmark	25½	23	23
Netherlands	37½	28	41½
Switzerland	10	15½	15½
Spain	16	21	27½
United States	140½	240	286
China	5	7	8½
Cuba	4½	8½	13
Mexico	13½	21½	21½
Chili	5½	9½	12½
Brazil	8	8½	9
Argentina	37½	64	51½
Other foreign countries	69½	34½	34

Our total exports to neutral countries including the United States, for the same periods were 172,000,000, 126,000,000 and 162,000,000. In the main the exports showed during 1916 almost identical figures with those of 1914, and it is the maintenance of our export trade at relatively the same level, which furnishes the best argument that we are pursuing our industrial and commercial path, in spite of the interference of war, in a manner which inspires every faith in our being able to bring the war to a successful issue.—London Syren.

Topical Talks on Iron.

LI.—Manganese.

The American steel industry owes a great deal to Brazil, for without Brazil there would probably be very little ferromanganese for making steel, and it is a serious question whether a satisfactory substitute could be found.

The function of manganese is to clear the molten steel of oxides, the manganese uniting with the oxygen, restoring iron, and itself slagging off. The two common commercial forms of manganese are ferromanganese, the standard containing about 80% manganese and about 7% carbon, with say 12% iron, and spiegeleisen, the standard usually containing about 20% manganese about 5% carbon and about 84% iron.

With normal supplies of all materials soft steel as well as carbon steel produced in the open-hearth furnace are treated with ferromanganese, while carbon steel (for rails) made in the Bessemer converter is treated with spiegeleisen. In each case the same amount of manganese is to be used per ton of steel made. With the open-hearth furnace the amount of carbon desired can be left in the steel, but with the Bessemer process it is necessary to remove practically all the carbon, and in order to provide the carbon needed in rail steel it is necessary to use spiegeleisen which as can be seen from the analyses given contains a great deal more carbon

in proportion to manganese.

Prior to 1905 the great source of supply of manganese ore was Russia, the production of India, Spain and Brazil being very light. In 1905 the production of India began to grow and in two or three years it amounted to substantially as much as the Russian production. The Spanish production dropped to almost nothing. The Brazilian production was growing but slowly at that time.

The war, of course, shut off the Russian supply entirely, whether it was desired to smelt the ore in England or in the United States, and the supply from India has been more and more reduced on account of the long ocean voyage and the difficulties in navigating the Mediterranean safely.

In this emergency the production of manganese ore in Brazil has been very greatly increased, so that of late the United States has been making fully three-fourths of the ferromanganese required, from Brazilian ores, importing from England about one-fourth, which is made from Indian and Brazilian ores. It would be extremely unfortunate at this juncture if Brazil could not be drawn upon for manganese ore. The deposits in the United States amount to nothing from a commercial standpoint.

Lake Superior Iron Ore

Shipments of iron ore down the lakes have been as follows, in gross tons:

	1913.	1914.	1915.	1916.	1917.
April	866,386	269,686	503,832	1,658,411	211,532
May	7,284,212	3,852,063	5,012,359	8,449,580	6,283,612
June	7,974,444	5,502,367	6,005,091	9,507,576	9,639,991
July	8,204,416	5,784,514	7,204,021	9,750,157	
August	7,677,601	5,869,477	8,081,117	9,850,140	
September ..	7,258,413	5,431,307	7,863,146	9,600,786	
October	6,526,103	4,242,392	7,146,873	9,116,196	
November ...	3,270,958	1,070,092	4,445,129	5,715,452	
December	18,545	.....	57,236	1,085,900	
Season Lake	49,070,478	32,021,897	46,318,804	64,734,198	16,135,135

Steel Plants.

XX.—Page Woven Wire Fence Company.

The steel plant of the Page Woven Wire Fence Company (it had fence making and other departments at Adrian, Mich., now devoted to other products) is located at Monessen, Pa., a town occupying a site that was farmland 20 years ago, but now boasts two blast furnaces, two steel plants with finishing departments, a large tin plate mill and other important industries.

The Page plant comprises two 60-ton basic open-hearth furnaces, a 25-inch three-high blooming mill, a semi-continuous rod mill with four stands of two-high 14-inch billet rolls, five stands of 12-inch rolls and five stands of ten-inch rolls, continuous, and four stands of eight-inch two-high looping mills. There are 212 wire drawing blocks and 81 machines for barb and woven wire fencing.

Like many of the smaller independent steel plants, the Page plant was built for the purpose of furnishing steel of special character, difficult to obtain in the open market. The company had been a pioneer in the manufacture of woven wire field fencing and required a special grade of spring steel for the

purpose. With the steel plant available since the fore part of 1900, it has developed the manufacture of spring wire for other consumers, makers of springs for automobile seats, valve springs, talking machine needles, and many other products. A number of makers of wire rope are also supplied with spring wire.

A specialty introduced some time ago is the manufacture of wire from "Armco" iron, the Page Company having exclusive wire rights on this product. The wire is used for electrical purposes, also in cases where rust resisting quality is particularly essential, and it proves particularly desirable for welding purposes.

Another specialty is the manufacture of "copperweld" copper clad wire, from raw material made at Rankin, Pa., by the Copper Clad Steel Company, the wire being used for various purposes where strength is particularly desired combined with electric conductivity and resistance to oxidation. This copper clad wire is used in railroad signal work, river crossing cables, etc.

The Iron and Steel Situation.

Features of June.

Pig iron advanced an average of \$9.50 per ton.

Finished steel advanced about \$20 a ton.

Steel bookings were even lighter than in May.

Government regulation of iron and steel prices came to be regarded as a distinct possibility.

The iron and steel market has become simply impossible. The form of the market remains without the substance. There are prices which in the absence of any other must be quoted as the market, and that is the form, but the actual substance, in general trading, is absent. There is no regular buying. The railroads are altogether out of the market, new building projects are not being undertaken and manufacturing consumers generally assert that they could not do business if they had to pay present prices on their entire consumption.

There are occasional instances of a consumer who can afford to pay almost any price that would be asked. He buys, if he can. There are occasional consumers who are fairly well covered at certain prices, but need a little more steel and can pay double price for it without materially increasing the average cost. They also buy if they can. Such are the transactions that are making what market there is.

Prices of Deliveries.

Tank plates are quoted at nine to ten cents a pound, this being for delivery within a few months. There are no prices for really distant deliveries. A large tonnage of plates is being delivered at three cents or less, which means merely that the plates were sold prior to last October. Several sheet mills quote a minimum of nine cents on black sheets. There are sheets still due buyers at less than three and a half cents, which means merely that the sale was made prior to last November. The leading pipe interest and an important

independent have not advanced their lists above 55% off, but the majority of mills are quoting 42%. Bids of \$15 have been made for tin plate, when the mills have scarcely begun to make deliveries on contracts taken at \$7.50 to \$8.00.

Government Regulation.

In the circumstances it is natural that there should be a call for Government regulation of prices and during the past few months the opinion has spread that such regulation is going to come. The circumstances indicate clearly that, however difficult, there should be regulation. If steel were a luxury it might not matter, but steel is an industrial necessity. Practically speaking it is also an agricultural necessity. The farmers are called upon to raise all the crops they can, confronted with food regulation and food economy, home gardens all over the country and impossible steel prices. The railroads are called upon to make sacrifices, to move all the traffic possible, irrespective of which affords the greater profit, and are confronted with impossible prices for equipment.

It is not a question of reducing profits of the iron and steel producing industry. The last profits it reported were for the first quarter of this year, very satisfactory profits indeed. The average market price of finished steel products to-day, taking the market as it has to be quoted, is double the average prices at which shipments were made in the first quarter of this year.

Steel Buyers in Quandary.

It is not remarkable in the circumstances that the railroads have stopped buying and that there are no new projects for ordinary investments in bridges, buildings, etc. What is remarkable is that some manufacturing consumers of steel products, are still buying or thinking of buying, when they confess they do not see how they can come out even on the prices they would have to pay. They are in a quandary, perhaps, but that means they are

about equally disposed. to buy, or not to buy, and that is remarkable.

Pig Iron.

Pig iron has had a remarkable advance. Using our **composite** as an index, the following advances have occurred in the average price of pig iron of various descriptions in the different districts:

March	\$5.13
April	3.20
May	3.20
June	9.50

The total advance is \$21.03, from \$31.93 on March 1st to \$52.96 on June 1st. In our composite there is an average of 76 cents of freights, some of the items being taken delivered, and deducting this, the average price at furnace on July 1st was \$52.20.

There was a great deal of pig iron sold last August and September for the first half of this year, and some of the iron has not yet been delivered. The average market price at furnace dur-

ing the two months was a shade less than \$18. Thus the experience of many furnaces during June was that of shipping \$18 pig iron at a loss and selling \$50 pig iron at a prospective profit simply fabulous.

The theory with respect to pig iron is that there will not be enough to supply all the steel-making capacity, together with the necessary foundry requirements, hence the steel furnace will way the value of steel minus the cost of conversion rather than curtail operations. When some furnaces are selling pig iron at three times the price at which they are delivering it it is rather difficult to forecast what is going to occur. The ability of the steel mill to pay may be clearly established, but the case of the foundry may be different.

It is possibly significant that the scrap markets advanced sharply during the major part of June and then experienced a decided reaction. If material is as scarce as indicated by present prices there can hardly be much dis-

Pig Iron Prices.

(Averaged from daily quotations; at Philadelphia, Buffalo, Cleveland and Chicago, prices are delivered.

	Bessemer.	Basic. Valley	No. 2 fdy.	Basic. Phila.	No 2 X fdy. Phila.	Buffalo.	Cleve- land.	No. 2 fdy. Chi- cago.	Ferro- Birm- ingham.	mangan- ese.*	Fur- nace coke x
1916.											
Jan. . .	21.00	18.00	18.50	19.24	19.71	18.25	18.80	19.00	14.92	115.40	3.14
Feb. . .	20.50	17.88	18.50	19.50	19.75	18.25	18.80	19.00	14.64	139.00	3.41
Mar. . .	20.67	18.48	18.50	19.60	19.77	18.77	18.86	19.24	15.00	175.00†	3.45
April . .	21.00	18.48	18.50	20.50	20.20	19.25	19.00	19.50	15.00	175.00	2.45
May . .	21.00	18.21	18.44	20.50	20.25	19.15	19.08	19.50	15.00	175.00	2.34
June . .	21.00	18.25	18.39	19.90	20.04	18.75	19.30	19.50	14.63	175.00	2.54
July . .	21.00	18.00	18.25	19.15	19.75	18.75	18.80	19.50	14.00	175.00	2.65
Aug. . .	21.00	18.00	18.27	19.00	19.58	18.75	18.57	19.17	14.00	175.00	2.75
Sept. . .	21.32	18.27	18.58	19.50	19.50	19.04	18.67	18.75	14.38	165.00	2.94
Oct. . .	23.81	20.17	20.56	20.52	20.58	20.48	19.87	19.79	15.35	165.00	5.69
Nov. . .	29.40	24.80	25.60	24.68	25.00	27.31	24.58	25.70	19.72	165.00	6.91
Dec. . .	34.84	29.84	29.84	29.84	30.27	33.81	30.48	29.34	23.38	170.00	9.00
Year . .	23.05	19.87	20.16	10.96	21.20	20.67	20.40	20.67	15.84	164.12	3.94
1917.											
Jan. . .	35.00	30.00	30.00	30.00	31.48	35.25	30.95	30.50	24.27	175.00	9.44
Feb. . .	35.00	30.00	30.00	30.45	31.96	35.25	31.78	31.42	24.13	210.00	10.57
Mar. . .	36.70	31.93	34.96	33.93	37.01	35.81	36.21	35.65	29.67	270.00	9.58
April . .	41.36	38.52	39.16	39.40	41.75	40.09	39.30	39.34	33.76	325.00	8.00
May . .	44.12	41.46	42.65	40.75	43.67	43.33	41.49	43.15	36.62	400.00	8.40
June . .	53.50	49.23	46.50	46.86	46.90	46.90	48.99	50.04	40.92	400.00	11.20

* Contract price delivered, † Et seq., domestic, delivered. x Prompt, f.o.b. Connellsville ovens.

inction drawn between scrap and pig iron.

Government Requirements.

The matter of prices to be paid for steel required in Government work is being adjusted in circles that do not conduct their discussions in the public prints, and the matter the Washington correspondents write up, for want of better matter, is not to be regarded very seriously. It is probably not far out to guess that when prices are finally adjusted they will not be far from the prices that have been obtained in the past six months on shipments.

There is very little information available as to the steel orders placed by the Government or for Government account. Naturally there is considerable secrecy, but apart from that the steel is required in such a wide va-

riety of forms that to strike a total a very long list would have to be made out. Steel for shipbuilding is being let almost every day, but the tonnages are not especially significant for the reason that the delivery period is in doubt. Some contracts are being let to contractors who must still provide their facilities, and as bearing upon the market situation the question cannot be one of total tonnages, but of the rate per month at which shipbuilding can absorb steel. Next to ship steel perhaps the most important pressing requirements are in steel for hangars and for equipping the army cantonments. The cantonments will not require a great deal of iron and steel in the aggregate, a few hundred thousand tons at the outside, but all the material is to be delivered, if possible, within two or three months.

Finished Steel Prices.

(Averaged from daily quotations, f.o.b. Pittsburgh.)

(Averaged from daily quotations, 1880-1913, Pittsburgh.)												
	Shapes	Plates.	Bars.	Pipe.	Wire.	Grooved		Sheets			Tin plate.	Comp. Fin. steel.
						Wire Nails.	Steel Skelp.	Black.	Galv.	Blue Annlid.		
1916												
January	1.87	1.90	1.87	76¾	1.98	2.13	1.75	2.60	4.75	2.55	3.75	2.1410
February ...	2.06	2.16	2.06	75½	2.11	2.26	1.94	2.60	4.80	2.65	3.83	2.2988
March	2.36	2.53	2.36	73¾	2.25	2.40	2.24	2.73	4.93	2.85	4.20	2.5579
April	2.50	2.75	2.50	71½	2.25	2.40	2.35	2.89	5.00	2.95	4.70	2.7166
May	2.50	2.83	2.50	70	2.45	2.50	2.35	2.90	5.00	3.00	5.46	2.8043
June	2.50	2.90	2.50	70	2.45	2.50	2.35	2.90	4.80	3.00	5.75	2.8300
July	2.50	2.90	2.50	70	2.45	2.50	2.35	2.90	4.40	2.90	6.00	2.8425
August	2.54	2.94	2.56	70	2.53	2.58	2.35	2.90	4.20	2.90	5.54	2.8588
September ..	2.60	3.00	2.60	69¼	2.55	2.60	2.35	2.91	4.20	2.90	5.75	2.9013
October ...	2.63	3.07	2.62	69	2.59	2.64	2.40	3.23	4.50	3.15	5.77	2.9747
November ..	2.86	3.33	2.76	68½	2.79	2.84	2.75	3.72	5.34	3.66	6.40	3.2036
December ..	3.03	3.53	2.93	66	2.95	3.00	2.85	4.40	6.27	3.65	7.18	3.4679
Year	2.50	2.82	2.48	70⅞	2.45	2.55	2.34	3.06	4.85	2.99	5.34	2.8099
1917.												
January	3.11	3.61	3.00	64	2.95	3.00	2.85	4.50	6.50	4.25	7.23	3.5249
February ...	3.25	3.75	3.00	62⅞	2.95	3.00	2.85	4.63	6.75	4.50	7.83	3.6529
March	3.52	4.33	3.27	60¾	3.13	3.18	3.50	4.90	7.00	4.70	8.00	3.9454
April	3.70	4.50	3.39	55	3.23	3.28	3.50	5.88	7.40	5.40	7.60	4.1965
May	4.00	4.50	3.64	49	3.45	3.50	3.75	6.71	9.00	6.70	8.00	4.5272
June	4.35	7.10	4.00	49	3.66	3.71	5.00	7.50	9.75	8.00	8.00	5.1587

Portland Cement Production.

The final report on Portland cement production in 1916 shows 91,521,198 barrels (380 pounds) which compares with the preliminary statement made at the beginning of the year (given in our annual **Metal Statistics**) of 91,194,000 barrels, so that the Geological Survey was out only about half a per cent. in its estimate. The production was a trifle under the record made in 1913, about two-thirds of one per cent.

The shipments of Portland cement in 1916, however, made a new record for a year, being now reported at 94,552,296 barrels. In a few cases prices were lower than in 1915 but the average was

higher, the average factory price being \$1.058, against \$0.860 in 1915.

For comparison with the rate of increase in pig iron production, which in a general way doubles every ten years, one-half the 1916 production of Portland cement fell in 1906, ten years earlier, while one-quarter the production fell in 1903, three years earlier. In the preceding years the increase had been very rapid. That was perfectly natural, of course. It may be taken that cement rapidly mounted to a regular position in industry and then the increase pursued a more even gait.

U. S. Steel Corporation's Operations.

Earnings and Unfilled Orders.

Earnings by Quarters.

Net earnings by quarters since 1911:

Quarter.	1917.	1916.	1915.
1st	\$113,121,018	\$60,713,624	\$12,457,809
2nd		81,126,048	27,950,055
3rd		83,817,067	38,710,644
4th		105,968,347	51,277,504
Year		333,625,086	130,396,012
	1914.	1913.	1912.
1st	\$17,994,382	\$34,426,802	\$17,826,973
2nd	20,457,596	41,219,813	25,102,266
3rd	22,276,002	38,450,400	30,063,512
4th	10,935,635	25,084,330	35,181,922
Year	71,663,615	137,181,345	108,174,673

Unfilled Orders.

(At end of the Quarter.)

	First.	Second.	Third.	Fourth.
1904 ..	4,136,961	3,192,277	3,027,436	4,696,203
1905 ..	5,579,560	4,829,655	5,865,377	7,605,086
1906 ..	7,018,712	6,809,584	7,936,884	4,489,718
1907 ..	8,043,858	7,607,878	6,425,008	4,642,553
1908 ..	3,765,343	3,313,876	3,421,977	3,603,527
1909 ..	3,542,590	4,057,939	4,796,833	5,927,031
1910 ..	5,402,514	4,231,794	3,158,106	2,674,757
1911 ..	3,447,301	3,361,058	3,611,317	5,084,761
1912 ..	5,304,841	5,807,346	6,551,507	7,932,164
1913 ..	7,468,956	5,807,317	5,003,785	4,282,108
1914 ..	4,651,825	4,032,857	3,787,667	3,836,643
1915 ..	4,255,749	4,678,196	5,317,608	7,805,220
1916 ..	9,331,001	9,640,458	9,522,584	11,547,286
1917 ..	11,514,644			

Bookings and Shipments.

In this table, first two columns, percentages of bookings and shipments to total capacity, our own estimates, while last column is derived from official reports of "unfilled tonnage" while third percentage column is directly computed from this tonnage column.

	Ship-ments.	Book-ings.	Dif-ference.	Dif-ference.
1915—	%	%	%	Tons.
May	76	85	- 9	+102,354
June	79	113	+34	+413,598
July	83	104	-21	+250,344
August	91	89	- 2	- 20,985
September .	98	133	+35	+409,163
October	103	172	+69	+847,834
November .	102	186	+84	+1,024,067
December .	102	152	-50	+615,731
1916—				
January ...	102	112	+10	+116,547
February ..	102	157	+55	+646,199
March	104	164	+60	+762,035
April	104	146	+42	+498,550
May	104	82	-22	-297,340
June	104	82	-22	-297,340
July	90	86	- 4	- 46,866
September .	96	87	- 9	-137,173
October ...	106	145	+39	+492,676
November .	104	189	+85	+1,043,282
December .	96	136	+40	+488,744
1917—				
January ...	92	86	- 9	- 73,232
February ..	92	101	+ 9	+102,643
March	97	107	+10	+134,947
April	99	137	+38	+471,439
May	98	75	-23	-296,492
Total unfilled obligations, May 31, 1917,				
11,886,591 tons.				

Tin Plate Movement.

United States imports and exports of tin plate in gross tons have been as follows, the imports of course including those for drawback purposes:

	Imports.	Exports.
1906	56,983	12,082
1907	57,773	10,293
1908	58,490	11,878
1909	62,592	9,327
1910	66,640	12,459
1911	14,098	61,466
1912	2,053	81,694
1913	20,680	57,812
1914	15,411	59,549
1915	2,350	154,642
1916	1,008	227,391
January, 1916	62	12,178
February	107	13,534
March	44	20,363
April	179	21,385
May	39	25,585
June	91	29,751
July	150	18,760
August	105	18,757
September	51	18,770
October	111	14,195
November	38	15,816
December	34	18,229
January, 1917	31	23,408
February	35	14,632
March	21	21,680
April	34	19,936

The stockholders of the Keystone State Fair and Industrial Exposition Company, Middletown, Pa., have voted to provide a site on the company's fair grounds for the erection of a plant for the manufacture of aeroplanes, hydroplanes, and other aircraft. It is said that the new plant will be constructed by the Keystone Industrial Corporation, Harrisburg, Pa., recently incorporated in Delaware with a capital of \$1,500,000. George W. McIlhenny, 25 North Thirteenth Street, Harrisburg, is associated with the new company.

The New Jersey Shipbuilding Co., Gloucester City, N. J., has awarded a contract to George Pawling & Company, Camden, N. J., for the construction of its proposed new shipbuilding plant.

Car and Locomotive Buying.

Freight Cars Ordered.

1915: Domestic	105,000	
Export	20,000	
Total, 1915		125,000
1916: Domestic	165,000	
Export	29,000	
Total, 1916		194,000
1917: Domestic	38,618	
Export	28,600	
January	16,840	
February	19,566	
March	9,687	
April	1,772	
May	12,298	
June	7,055	
Six months		67,218

Locomotives Ordered.

1915: Domestic	1,500	
Export	800	
Total, 1915		2,300
1916: Domestic	2,850	
Export	2,900	
Total, 1916		5,750
1917: Domestic	936	
Export	1,592	
January	807	
February	299	
March	232	
April	339	
May	1,276	
June	375	
Six months		3,528

STRUCTURAL STEEL LETTINGS

Reports of the Bridge Builders' and Structural Society, lettings of structural steel contracts by months in percentage of the fabricating capacity, capacity being now about 180,000 tons a month.

	1914.	1915.	1916.	1917.
January	62	25	69	61
February	63	30	75	58
March	76	64	102	88
April	88	62	72	60
May	57	61	80	56
June	56	80	58	
July	68	86	47	
August	27	85	64	
September	38	67	72	
October	35	78	77	
November	20	105	78	
December	35	121	86	
Average	52	72	71	

Comparison of Metal Prices.

	Range for 1913		Range for 1916		Range for 1917		Closing, June 30, 1917.
	High.	Low.	High.	Low.	High.	Low.	
Pig Iron							
Bessemer, valley	21.00	13.60	35.00	20.00	56.00	35.00	56.00
Basic, valley	18.00	12.50	30.00	17.75	54.00	30.00	54.00
No. 2 foundry, valley	18.50	12.50	30.00	18.25	53.00	30.00	53.00
No. 2X fdy. Philadelphia.	19.50	14.00	30.75	19.50	50.75	30.75	50.75
No. 2 foundry, Cleveland .	18.80	13.00	30.95	18.50	54.30	30.95	54.30
No. 2X foundry, Buffalo.	18.00	11.75	35.00	18.00	50.00	35.00	50.00
No. 2 foundry, Chicago ..	18.50	13.00	30.00	18.00	55.00	30.00	55.00
No. 2 South'n Birmingham	14.50	9.25	25.00	14.00	48.00	24.00	48.00
Scrap Iron and Steel.							
Melting steel, Pittsburgh.	18.00	11.00	27.00	16.00	47.00	22.00	42.00
Heavy steel scrap, Phila. .	16.25	9.50	24.50	14.75	41.00	20.50	40.00
Heavy melt. steel, Chicago	15.25	8.75	24.00	14.50	43.00	21.50	40.50
No. 1 R. R. wrought, Pitts.	17.25	10.75	29.00	17.50	47.00	19.50	47.00
No. 1 cast, Pittsburgh	15.00	11.00	23.50	14.75	38.00	19.75	36.50
Iron and Steel Products.							
Bessemer rails, mill	28.00	28.00	38.00	28.00	38.00	38.00	38.00
Iron bars, Pittsburgh	1.90	1.20	3.25	1.90	5.00	3.25	5.00
Iron bars, Philadelphia ...	2.06	1.12½	3.16	2.06	5.16	3.16	4.66
Steel bars, Pittsburgh	1.80	1.10	3.00	1.85	4.50	3.00	4.50
Tank plates, Pittsburgh ...	1.60	1.10	3.60	1.85	9.00	3.50	9.00
Structural shapes, Pitts. .	1.80	1.10	3.10	1.85	4.50	3.10	4.50
Grooved steel skelp, Pitts..	1.75	1.12½	2.85	1.75	6.00	2.25	6.00
Black sheets, Pittsburgh ..	2.60	1.70	4.50	2.60	8.00	4.50	8.00
Galv. sheets, Pittsburgh...	5.00	2.65	6.50	4.15	11.00	6.25	10.00
Tin plate, Pittsburgh	3.60	3.10	7.50	3.75	8.50	7.00	8.25
Wire nails, Pittsburgh	2.10	1.50	3.00	2.10	4.00	3.00	4.00
Steel pipe, Pittsburgh	79¢	81¢	64¢	58¢	42¢	64¢	42¢
Connellsville Coke at ovens.							
Prompt furnace	3.50	1.50	12.00	2.50	15.75	8.00	15.00
Prompt foundry	3.75	2.00	12.00	3.25	15.75	10.00	15.00
Metals—New York.							
Straits tin	57.00	32.00	56.00	37.50	66.50	42.50	62.25
Lake copper	23.00	13.00	36.00	23.00	37.00	27.75	31.00
Electrolytic copper	23.00	12.80	36.00	23.00	37.00	27.75	32.37½
Casting copper	22.00	12.70	34.00	22.00	34.00	26.50	29.75
Sheet copper	27.25	18.75	42.00	28.00	44.00	39.00	39.50
Lead (Trust price)	7.00	3.70	7.50	5.50	11.00	7.50	11.00
Spelter	27.25	5.70	21.17½	8.37½	11.50	8.92½	9.17½
Chinese & Jap. antimony.	40.00	13.00	45.00	10.50	36.00	14.25	18.00
Aluminum, 98-99%	60.00	18.75	67.00	53.00	64.00	56.00	58.00
Silver	56½	46¼	77½	55½	79	71¾	77½
St. Louis.							
Lead	7.50	3.50	8.25	5.45	12.00	7.30	11.25
Spelter	27.00	5.55	21.00	8.20	10.87½	8.75	9.00
Sheet zinc (f.o.b. smelter)	33.00	9.00	25.50	15.00	21.00	19.00	19.00
London							
	£	£	£	£	£	£	£
Standard tin, prompts	190	148¾	205	161½	256½	180¾	244
Standard copper, prompts	86¾	57½	15½	84	146	130	130
Lead	30¼	18¼	36½	27¾	30½	30½	30½
Spelter	110	28½	110	44	55	45½	54
Silver	27¼d	22¾d	37d	26½d	39¾d	35¼d	39¾d

Comparison of Security Prices.

	Range for 1915		Range for 1916		Range for 1917		Closing, June 29,
	High.	Low.	High.	Low.	High.	Low.	1917.
Iron and Industrial Stocks.							
Allis-Chalmers Mfg.	49 ¹ / ₈	73 ¹ / ₄	38	19	32 ¹ / ₈	20 ¹ / ₈	29
Allis-Chalmers Mfg. pfd.	85 ⁵ / ₈	33	92	101 ¹ / ₂	86 ⁵ / ₈	79 ¹ / ₄	85 ¹ / ₂
American Can	68 ¹ / ₂	25	68 ¹ / ₂	44	53	36	48 ¹ / ₂
American Can pfd.	113 ¹ / ₂	89	115 ³ / ₈	107 ⁵ / ₈	111	103	104 ⁵ / ₈
American Car & Fdy.	98	40	78 ¹ / ₂	52	80 ³ / ₈	57	78
American Locomotive	73 ³ / ₄	19	98 ¹ / ₄	58	82 ³ / ₄	62 ¹ / ₂	70 ¹ / ₂
American Smelt'g & Refining	108 ⁵ / ₈	56	123 ³ / ₄	88 ¹ / ₂	112 ³ / ₄	93 ¹ / ₂	107
American Steel Foundries ..	74 ¹ / ₂	24 ¹ / ₈	73	44	75 ¹ / ₂	52	71 ¹ / ₄
American Zinc, Lead & Smelt'g	71	67 ¹ / ₄	97 ⁵ / ₈	29 ¹ / ₈	41 ¹ / ₈	28	31 ¹ / ₂
Anaconda Copper	91 ⁵ / ₈	49 ¹ / ₂	105 ³ / ₈	77	87	70	81
Baldwin Locomotive	154 ¹ / ₂	26 ⁵ / ₈	118 ¹ / ₂	52	74 ³ / ₄	43	71 ⁵ / ₈
Bethlehem Steel	600	46 ¹ / ₄	700	415	515	119	145 ¹ / ₂
Bethlehem Steel pfd.	184	91	168	126	135	117 ¹ / ₄	120
Chino Copper	57 ³ / ₈	32 ³ / ₄	74	46 ¹ / ₈	63 ³ / ₄	48 ¹ / ₈	55 ¹ / ₂
Colo. Fuel & Iron Co.	66 ¹ / ₂	21 ³ / ₄	63 ¹ / ₄	38 ¹ / ₈	58	38 ¹ / ₂	52 ⁵ / ₈
Crucible Steel	109 ⁵ / ₈	18 ³ / ₄	99 ¹ / ₂	50 ¹ / ₄	88 ⁵ / ₈	50 ¹ / ₂	87 ³ / ₄
Crucible Steel pfd.	112 ¹ / ₂	84	124 ⁵ / ₈	108 ¹ / ₄	117 ³ / ₄	102	103
Driggs-Seabury .....	...	...	119 ³ / ₄	45 ¹ / ₈	87 ¹ / ₈	39 ⁵ / ₈	79
General Electric	185 ¹ / ₂	138	187 ¹ / ₄	159	171 ³ / ₄	150 ⁵ / ₈	162
Granby Consolidated	91	79 ¹ / ₄	120	80	92 ³ / ₄	75 ¹ / ₈	86
Great Northern Ore Prop. ..	54	25 ¹ / ₄	50 ³ / ₄	32	38 ¹ / ₈	27 ³ / ₄	31 ³ / ₄
Gulf States Steel .....	...	...	193	71	137	99 ¹ / ₂	128
International Harv. of N. J. ..	114	90	126 ⁷ / ₈	108 ¹ / ₂	123	107 ¹ / ₂	112
International Harv. Corp.	85	55	122	114	121	114	114 ¹ / ₂
Inter. Harv. Corp. pfd.	114	90 ¹ / ₂	90 ¹ / ₄	68 ¹ / ₈	88	65	70
Inter. Harv. of N. J., pfd. ...	120	100	114 ³ / ₄	104 ⁷ / ₈	114	102	102
Lackawanna Steel	94 ³ / ₄	28	107	94	103 ⁵ / ₈	70 ¹ / ₈	96 ⁵ / ₈
National Enam. & Stamp.	36 ¹ / ₈	9 ¹ / ₂	36 ¹ / ₂	19 ³ / ₄	42 ³ / ₈	24	37 ⁵ / ₈
National Enam. & Stamp. pfd. ...	97	79	100 ¹ / ₈	90 ¹ / ₄	101	90 ¹ / ₂	97 ³ / ₄
National Lead	70 ³ / ₄	44	74 ⁵ / ₈	57	68 ¹ / ₄	52	57
National Lead, pfd.	115	104 ³ / ₄	117 ⁵ / ₈	111 ¹ / ₂	114	101	110
New York Air Brake	164 ³ / ₄	56 ¹ / ₂	186	118	156	128	143 ¹ / ₂
Pressed Steel Car	78 ¹ / ₄	25	88 ¹ / ₂	42 ¹ / ₂	83 ¹ / ₄	70	75
Pressel Steel Car, pfd.	106	86	108	81 ¹ / ₂	106	100	100
Railway Steel Spring	54	19	61 ³ / ₄	32	58	43	53 ¹ / ₂
Railway Steel Spring pfd. ...	102	86 ¹ / ₂	104 ³ / ₄	95 ¹ / ₄	101	94	96 ⁵ / ₈
Ray Consolidated Copper	27 ¹ / ₂	15 ¹ / ₄	37	29	32 ¹ / ₄	23	28 ¹ / ₂
Republic Iron & Steel	57 ¹ / ₂	19	93	42	94 ¹ / ₂	60	91
Republic Iron & Steel, pfd. ...	112 ⁵ / ₈	72	117	101	105 ⁵ / ₈	99	105
Sloss-Sheffield	66 ⁵ / ₈	22	93 ¹ / ₄	37	74 ³ / ₄	42 ⁵ / ₈	57
Sloss-Sheffield, pfd.	102	85	103 ¹ / ₂	91 ¹ / ₂	99	93	99
Texas Company	237	120	241 ¹ / ₂	177 ¹ / ₄	243	199	212
U. S. Cast Iron Pipe	31 ⁵ / ₈	8	28 ¹ / ₂	16 ¹ / ₈	24 ¹ / ₂	17	22 ¹ / ₂
U. S. Cast Iron Pipe pfd.	55 ¹ / ₂	32 ¹ / ₂	67 ¹ / ₂	48 ¹ / ₈	62 ³ / ₄	54	57 ¹ / ₂
U. S. Smelting & Refining ..	...	...	81 ¹ / ₂	57	67 ³ / ₈	72 ³ / ₈	59
U. S. Smelting & Refining pfd. ...	...	...	53 ¹ / ₂	50	52 ¹ / ₄	49 ¹ / ₂	50
U. S. Steel Corporation	89 ¹ / ₂	38	129 ³ / ₄	79 ³ / ₄	136 ⁵ / ₈	99	130 ⁵ / ₈
U. S. Steel Corporation, pfd. ...	117	102	123	115	121 ¹ / ₂	116 ⁵ / ₈	117
Utah Copper	81 ¹ / ₂	48 ¹ / ₂	130	73 ¹ / ₄	118 ³ / ₄	97	110 ¹ / ₂
Virginia Iron, Coal & Coke ..	74	36	72 ¹ / ₂	41	77	46	70
Westinghouse Elec. & Mfg. ...	74 ⁷ / ₈	32	71 ⁵ / ₈	51 ¹ / ₄	56	45 ¹ / ₄	50

Railroad Earnings.

Railroad earnings per mile of road, having annual operating revenues above \$1,000,000, this being about 230,000 miles or about 90% of the total steam railway mileage; compiled by the Bureau of Railway Economics from reports furnished the Interstate Commerce Commission.

	1913-14			1914-15			1915-16		
	Revenue.	Expense.	Net.	Revenue.	Expense.	Net.	Revenue.	Expenses.	Net.
July	\$1,183	\$837	\$346	\$1,127	\$786	\$341	\$1,130	\$750	\$380
August ..	1,244	856	388	1,174	788	386	1,190	764	426
September	1,257	854	403	1,185	783	402	1,251	774	477
October ..	1,314	891	423	1,171	787	384	1,323	815	508
November	1,180	884	337	1,026	734	292	1,303	801	502
December.	1,116	821	296	993	730	263	1,253	802	451
January ..	1,021	795	226	939	718	221	1,133	798	335
February .	914	746	168	900	680	220	1,141	801	340
March	1,091	801	290	1,015	722	293	1,260	844	416
April	1,038	782	256	1,013	724	289	1,223	827	396
May	1,047	800	247	1,044	735	309	1,307	857	450
June	1,097	789	308	1,094	732	362	1,302	851	451
Fiscal year	13,483	9,801	3,682	12,678	8,915	3,763	14,818	9,684	5,134

1916-17			
	Revenue.	Expenses.	Net.
July	\$1,315	\$848	\$467
August ..	1,418	882	536
September	1,409	881	528
October ..	1,466	910	556
November	1,396	894	502
December	1,345	905	440
January ..	1,301	930	371
February ..	1,147	899	248
March	1,373	992	381
April	1,383	986	397

Wage Scale Averages.

Sworn averages of prices obtained by mills for shipments in months named, used in fixing wages under Amalgamated Association sliding scales.

	Bar Iron.			
	1914.	1915.	1916.	1917.
Jan.-Feb.	1.1590	1.024	1.40	2.35
Mar.-April	1.176	1.087	1.60	2.45
May-June	1.1257	1.10	1.85	
July-Aug.	1.0928	1.15	1.95	
Sept.-Oct.	1.0847	1.15	2.00	
Nov.-Dec.	1.037	1.30	2.15	
Year's av.	1.1125	1.144	1.83	

Sheets and Tin Plates.

	Sheets.		Tin Plates.	
	1916.	1917.	1916.	1917.
Jan.-Feb.	2.25	3.40	3.50	4.95
Mar.-April	2.50	3.90	3.70	5.75
May-June	2.60		3.90	
July-Aug.	2.70		4.05	
Sept.-Oct.	2.75		4.10	
Nov.-Dec.	2.80		4.25	
Year's av.	2.60		3.92	

Pig Iron Production.

Rates per annum, including charcoal pig.

April	39,600,000
May	39,800,000
June	39,500,000
July	38,350,000
August	39,200,000
September	39,300,000
October	41,700,000
November	40,700,000
December	37,700,000
January 1917	37,460,000
February	34,750,000
March	38,600,000
April	40,900,000
May	40,600,000
June	37,200,000
On July 1st	41,300,000

Actual production:

1910	27,303,567
1913	30,966,152
1914	23,332,244
1915	29,916,213
1916	39,434,797

Composite Steel.

Computation for July 2, 1917:

Pounds.	Group.	Price.	Extension.
100	Bars	4.50	11.250
100	Plates	9.00	13.500
100	Shapes	4.50	6.750
100	Pipe (12 in.)	5.65	8.475
100	Wire nails	4.00	6.000
100	Sheets (28 lb.)	8.00	8.000
100	Tin plates	8.00	4.000
10 pounds			57.975
One pound			5.7975

Averaged from daily quotations:

	1913.	1914.	1915.	1916.	1917.
Jan.	1.7737	1.5394	1.4554	2.1410	3.553
Feb.	1.7625	1.5794	1.4716	2.2988	3.653
Mar.	1.7646	1.5638	1.5098	2.5579	3.945
April	1.7742	1.5337	1.5357	2.7165	4.196
May	1.7786	1.5078	1.5381	2.8043	4.527
June	1.7719	1.4750	1.5312	2.8300	5.159
July	1.7600	1.4805	1.5692	2.8425	
Aug.	1.7400	1.5241	1.6059	2.8588	
Sept.	1.7093	1.5632	1.6506	2.9013	
Oct.	1.6779	1.5236	1.7264	2.9747	
Nov.	1.6203	1.4769	1.9089	3.2036	
Dec.	1.558	1.4324	2.0329	3.4679	
Year	1.7241	1.5182	1.6280	2.8009	

Scrap Iron and Steel Prices.

Melting Steel. Sheet Steel. Bundled No. 1 R. R. No. 1 No. 1 Heavy Steel. Wrought Cast. Steel. Melt'g. Pitts. Pitts. Pitts. Pitts. Phila. Ch'go.

1915—					
Nov.	16.12	12.55	15.35	13.90	14.65 13.95
Dec.	17.65	13.15	17.10	14.95	15.60 15.25
Year	13.26	10.54	12.26	12.40	12.54 10.90
1916—					
Jan.	17.75	13.40	18.00	15.10	16.30 15.60
Feb.	17.20	13.60	18.75	15.35	16.25 15.75
Mar.	18.40	14.80	19.15	15.75	17.15 16.75
Apr.	18.00	14.75	19.25	16.00	18.00 16.75
May	17.00	13.65	19.65	16.10	17.00 15.90
June	16.25	13.00	19.00	15.40	15.45 14.80
July	16.70	12.50	18.80	15.30	15.00 14.30
Aug.	16.25	11.70	18.15	15.00	15.00 15.30
Sept.	16.61	11.65	18.35	15.00	15.00 16.00
Oct.	18.25	11.65	19.30	15.80	15.65 17.35
Nov.	22.50	13.75	21.25	17.75	18.25 21.00
Dec.	35.50	16.00	27.20	21.40	23.95 23.65
Year	18.37	13.38	19.73	16.16	16.92 16.90
1917—					
Jan.	23.50	16.25	23.75	20.75	22.75 23.50
Feb.	22.50	15.75	22.50	19.75	21.15 22.25
Mar.	24.00	16.25	26.00	22.00	23.00 24.30
Apr.	27.75	17.25	30.50	24.00	25.50 27.30
May	29.25	19.25	33.00	25.25	26.50 29.00
June	40.75	24.00	40.50	32.25	34.50 38.50

Composite Pig Iron.

Computation for July 2, 1917:

One ton Bessemer, valley	\$56.00
Two tons basic, valley (54.00)	108.00
One ton No. 2 foundry, valley	53.00
One ton No. 2 foundry, Philadelphia	50.75
One ton No. 2 foundry, Buffalo	50.25
One ton No. 2 foundry, Cleveland	54.30
One ton No. 2 foundry, Chicago	55.50
Two tons No. 2 Southern, foundry Cincinnati (50.90)	101.80
Total, ten tons	529.60
One ton	52.96

Averaged from daily quotations:

	1913.	1914.	1915.	1916.	1917.
Jan.	17.391	13.492	13.070	18.690	30.752
Feb.	17.140	13.721	13.079	18.564	30.946
Mar.	16.775	13.843	12.971	18.857	34.353
April	16.363	13.850	12.914	19.021	39.140
May	15.682	13.808	13.206	18.965	42.037
June	14.968	13.606	13.047	18.552	48.160
July	14.578	13.520	13.125	18.585	
Aug.	14.565	13.516	14.082	18.514	
Sept.	14.692	13.503	14.895	18.697	
Oct.	14.737	13.267	15.213	20.192	
Nov.	14.282	13.047	16.398	25.243	
Dec.	13.838	13.073	17.987	30.082	
Year	15.418	13.520	14.150	20.306	

Unfinished Steel and Iron Bars.

(Averaged from daily quotations.)

	Billets. Pitts.	Sheet Bars. Pitts.	Rods. Pitts.	—Iron bars, deliv. — Phila. Pitts. Ch'go.		
1915—						
Dec.	30.73†	30.73†	39.50	1.99	1.83	1.69
Year	22.51	22.91	28.28	1.37	1.32	1.24
1916—						
Jan.	32.50†	32.50†	42.00	2.24	2.02	1.79
Feb.	34.00†	34.00†	48.00	2.41	2.25	1.92
Mar.	41.00†	41.00†	56.00	2.56	2.40	2.17
Apr.	45.00	45.00	60.00	2.62	2.50	2.35
May	43.00	43.00	59.00	2.66	2.60	2.35
June	42.00†	42.00†	58.00	2.66	2.60	2.35
July	42.50†	42.50†	58.00	2.66	2.60	2.35
Aug.	46.00	46.00	58.00	2.66	2.60	2.35
Sep.	47.00	45.00	58.00	2.66	2.70	2.35
Oct.	48.00	48.00	59.00	2.66	2.75	2.35
Nov.	52.75	54.00	65.00	2.66	2.85	2.50
Dec.	56.96	56.96	70.00	3.02	3.19	2.89
Year	44.23	44.17	57.58	2.57	2.59	2.31
1917—						
Jan.	63.50	63.50	75.00	3.16	3.25	3.00
Feb.	65.00	65.00	77.00	3.16	3.25	3.00
Mar.	68.00	68.00	79.00	3.44	3.46	3.00
Apr.	75.00	75.00	85.00	3.44	3.62	3.25
May	88.00	94.00	93.00	4.16	3.90	3.40
June	95.00	105.00	95.00	4.35	4.51	4.15

† Premium for open-hearth.

Price Changes of Iron and Steel Products From February 21, 1916 to Date.

Price changes in merchant bars, structural shapes, plates, wire nails, merchant pipe, sheets and tin plates are given below, with dates. These are the commodities used in compiling our **composite finished steel**. In some cases the dates named are those upon which prominent producers announced price changes, but more frequently the rates are merely those upon which our quotations were changed. A few other price changes are included.

1916—				1916—			
Feb. 21	Shapes	2.00	to 2.25	Oct. 16	Galv. sheets	4.40	to 4.50
" 21	Tin plate	3.75	to 4.00	" 19	Wire nails	2.60	to 2.70
" 29	Pipe	75¢	to 74¢	" 20	Sheets	3.25	to 3.35
" 29	Boiler tubes	64¢	to 63¢	" 20	Blue ann. sheets	3.00	to 3.15
Mar. 1	Wire nails	2.30	to 2.40	" 24	Plates	3.00	to 3.25
" 8	Black sheets	2.60	to 2.75	" 25	Bars	2.60	to 2.70
" 8	Blue ann. sheets	2.65	to 2.90	" 25	Shapes	2.60	to 2.70
" 13	Bars	2.25	to 2.35	" 25	Grooved skelp	2.35	to 2.50
" 13	Plates	2.35	to 2.60	" 26	Sheets	3.35	to 3.40
" 13	Shapes	2.25	to 2.35	" 26	Galv. sheets	4.50	to 4.75
" 15	Steel pipe	74¢	to 73¢	" 27	Blue ann. sheets	3.15	to 3.30
" 15	Boiler tubes	63¢	to 61¢	" 30	Tin plate	5.75	to 6.00
" 23	Bars	2.35	to 2.50	" 31	Shapes	2.70	to 2.80
" 23	Shapes	2.35	to 2.50	Nov. 1	Boiler tubes	54¢	to 52¢
" 28	Plates	2.60	to 2.75	" 6	Wire nails	2.70	to 2.85
" 29	Sheets	2.75	to 2.85	" 8	Sheets	3.40	to 3.65
" 29	Steel pipe	73¢	to 72¢	" 15	Tin plate	6.00	to 6.25
" 29	Boiler tubes	61¢	to 60¢	" 15	Grooved skelp	2.50	to 2.60
April 5	Sheets	2.85	to 2.90	" 15	Pipe	69¢	to 68¢
" 15	Boiler tubes	60¢	to 56¢	" 18	Galv. sheets	5.00	to 5.50
" 19	Tin plate	4.50	to 5.00	" 20	Tin plate	6.25	to 7.00
" 24	Pipe	72¢	to 70¢	" 20	Sheets	3.65	to 4.00
May 1	Wire nails	2.40	to 2.50	" 21	Bars	2.70	to 2.90
" 3	Tin plates	5.00	to 5.50	" 21	Plates	3.25	to 3.50
" 16	Plates	2.75	to 2.90	" 21	Shapes	2.80	to 3.00
June 7	Galv. sheets	5.00	to 4.75	" 21	Blue ann. sheets	3.30	to 3.40
" 16	Tin plate	5.50	to 6.00	" 21	Boiler tubes	52¢	to 46¢
July 7	Blue ann. sheets	3.00	to 2.90	" 25	Grooved skelp	2.60	to 2.85
" 7	Galv. sheets	4.75	to 4.50	" 27	Blue ann. sheets	3.40	to 3.50
Aug. 1	Tin plate	6.00	to 5.50	" 27	Galv. sheets	5.50	to 5.75
" 7	Wire nails	2.50	to 2.60	" 27	Wire nails	2.85	to 3.00
" 15	Bars	2.50	to 2.60	Dec. 4	Pipe	68¢	to 66¢
" 18	Shapes	2.50	to 2.60	" 4	Sheets	4.00	to 4.25
" 18	Plates	2.90	to 3.00	1916—			
" 25	Galv. sheets	4.25	to 4.15	Dec. 5	Galv. sheets	5.75	to 6.00
Sept. 7	Pipe	70%	to 69%	" 6	Blue ann. sheets	3.50	to 3.65
" 7	Boiler tubes	56%	to 54%	" 11	Sheets	4.25	to 4.50
" 20	Galv. sheets	4.15	to 4.25	" 11	Galv. sheets	6.00	to 6.25
" 28	Sheets	2.90	to 3.00	" 20	Tin plate	7.00	to 7.50
Oct. 3	Blue ann. sheets	2.90	to 3.00	" 21	Bars	2.90	to 3.00
" 3	Galv. sheets	4.25	to 4.30	" 21	Shapes	3.00	to 3.10
" 6	Sheets	3.00	to 3.10	" 21	Plates	3.50	to 3.60
" 7	Tin plate	7.50	to 6.00	" 26	Blue ann. sheets	3.75	to 4.00
" 13	Sheets	3.10	to 3.25	" 30	Pipe	66¢	to 64¢
" 13	Galv. sheets	4.30	to 4.40				
" 14	Tin plate	6.00	to 5.75				

1917—			
Jan. 10	Galv. sheets	6.25	to 6.50
" 10	Blue ann. sheets	4.00	to 4.25
" 16	Tin plate	7.00	to 7.50
" 30	Shapes	3.10	to 3.25
" 30	Plates	3.60	to 3.75
Feb. 6	Tin plate	7.00	to 8.00
" 14	Pipe	64%	to 62%
" 15	Sheets	4.50	to 4.75
" 16	Blue ann. sheets	4.25	to 4.50
Mar. 5	Pipe	62%	to 60%
" 5	Wire nails	3.00	to 3.20
" 8	Bars	3.00	to 3.35
" 8	Plates	3.75	to 4.50
" 8	Shapes	3.25	to 3.60
" 14	Sheets	4.75	to 5.00
" 14	Galv. sheets	6.50	to 6.75
" 20	Blue ann. sheets	4.50	to 4.75
" 20	Galv. sheets	6.75	to 7.00
Apr. 2	Tin plate	8.00	to 7.50
" 2	Pipe	60%	to 55%
" 3	Sheets	5.00	to 5.50
" 3	Blue ann. sheets	4.75	to 5.00
" 3	Galv. sheets	6.75	to 7.00
" 18	Sheets	5.50	to 6.00
" 18	Blue ann. sheets	5.00	to 5.50
" 18	Galv. sheets	7.00	to 7.50
" 20	Sheets	6.00	to 6.50
" 20	Blue ann. sheets	5.50	to 6.00
" 20	Galv. sheets	7.50	to 8.00
" 23	Wire nails	3.20	to 3.50
" 24	Bars	3.35	to 3.50
" 24	Shapes	3.60	to 4.00
" 25	Tin plate	7.50	to 8.00
May 1	Galv. sheets	8.00	to 9.00
" 3	Pipe	55%	to 49%
" 14	Bars	3.50	to 3.75
" 14	Plates	4.50	to 5.50
" 17	Sheets	6.50	to 7.00
" 17	Blue ann. sheets	6.00	to 6.50
" 18	Galv. sheets	8.00	to 8.50
" 18	Blue ann. sheets	6.50	to 7.00
" 18	Galv. sheets	8.50	to 9.25
June 7	Plates	5.50	to 7.00
" 8	Shapes	4.00	to 4.25
" 8	Galv. sheets	9.25	to 9.50
" 13	Sheets	7.00	to 7.50
" 13	Blue ann. sheets	7.00	to 7.50
" 15	Bars	3.75	to 4.00
" 18	Plates	7.00	to 8.00
" 19	Wire nails	3.50	to 4.00
" 20	Sheets	7.50	to 8.00
" 25	Bars	4.00	to 4.50
" 25	Shapes	4.25	to 4.50
" 25	Galv. sheets	9.50	to 10.00
" 28	Plates	5.00	to 9.00
" 29	Blue ann. sheets	7.50	to 8.00
July 2	Pipe	49%	to 42%

Steel Making Pig Iron Averages.

Bessemer and basic pig iron averages, compiled by Messrs. W. P. Snyder & Company from sales in the valley market of 1,000 tons and over.

	Bessemer.		Basic.	
	1916.	1917.	1916.	1917.
Jan. ..	\$20.645	\$35.00	\$17.833	\$30.00
Feb. ..	20.2136	35.418	17.984	30.00
Mar. ..	20.8625	36.423	18.25	32.537
April ..	20.70	41.332	18.00	37.996
May ..	20.833	45.9917	18.1607	41.8947
June ..	21.00	53.266	18.00	49.149
July ..	21.00		18.00	
Aug. ..	21.00		18.00	
Sept. ..	21.9346		18.63	
Oct. ..	23.6576		20.3086	
Nov. ..	29.12		27.229	
Dec. ..	34.213		30.00	
Year ..	22.9316		20.0329	

Above prices are f. o. b. valley furnace; delivered Pittsburgh is 95 cents higher.

British Iron And Steel Exports.

	Pig Iron.	Rails.	Tin Plate.	Totals.*
1912 ..	1,262,383	407,175	481,123	4,933,112
1913 ..	1,124,181	500,117	494,497	5,049,090
1914 ..	780,763	433,507	435,392	3,972,348
1915 ..	611,227	242,267	368,778	3,248,046
1916 ..	917,396	50,275	321,710	3,357,829
1916—				
Mar. ..	87,283	3,366	39,482	307,488
April ..	82,976	10,510	23,337	293,897
May ..	97,967	4,103	41,868	395,750
June ..	77,487	3,243	30,351	310,595
July ...	69,999	3,485	38,174	298,929
Aug. ..	95,655	1,983	34,124	319,928
Sept. ...	72,683	2,712	19,226	231,335
Oct. ...	72,187	6,929	10,929	241,261
Nov. ..	49,986	16,411	4,571	224,554
Dec. ..	48,542	2,317	14,248	158,609

1917—

Jan. ..	61,201	5,935	16,515	210,124
Feb. ..	59,970	851	11,069	186,308
Mar. ..	79,694	6,084	38,057	239,965
April ..	57,738	2,659	16,863	180,869
May ..	68,201	1,680	18,290	199,418
5 mos. .	326,804	17,207	78,618	1,016,686

* Includes scrap, pig iron, rolled iron and steel, cast and wrought iron manufactures, bolts, nuts, etc., but not finished machinery, boilers, tools, etc.

Iron and Steel Imports and Exports.

Value of Tonnage and Non-Tonnage.

	1912.	1913.	1914.	1915.	1916.	1917.
January	\$18,451,914	\$25,141,409	\$16,706,836	\$18,053,421	\$51,643,807	\$108,423,640
February	21,801,570	24,089,871	16,520,260	16,470,751	54,145,496	85,117,010
March	24,474,799	27,221,210	20,551,137	20,985,505	58,266,144	111,164,876
April	26,789,853	27,123,044	20,639,569	25,302,649	58,655,447	102,560,345
May	28,050,247	26,718,970	19,734,045	26,536,612	72,918,913	
June	24,795,802	25,228,346	18,927,958	31,730,132	76,257,844	
July	24,917,952	24,170,704	16,737,552	35,892,106	70,745,162	
August	25,450,107	23,947,440	10,428,817	37,726,657	86,296,703	
September ...	23,286,040	22,831,082	12,531,102	38,522,175	90,895,592	
October	25,271,559	25,193,887	16,455,832	43,299,457	82,010,972	
November	26,406,425	20,142,141	15,689,401	48,056,220	77,570,840	
December	23,750,864	22,115,701	14,939,613	45,825,147	88,536,958	
Totals	\$289,128,420	\$293,934,160	\$199,861,684	\$388,400,832	\$867,323,044	\$407,265,871

Exports of Tonnage Lines,---Gross Tons.

	1910.	1911.	1912.	1913.	1914.	1915.	1916.	1917.
January	118,681	152,362	151,575	249,493	118,770	140,550	357,122	608,286
February	110,224	150,919	204,969	241,888	121,206	139,946	368,981	449,107
March	124,980	216,360	218,219	257,519	159,998	174,104	438,656	606,563
April	117,921	228,149	267,313	259,689	161,552	226,587	384,796	521,179
May	135,306	178,589	307,656	242,353	139,107	263,113	540,549	
June	120,601	174,247	273,188	243,108	144,539	356,431	526,772	
July	127,578	162,855	272,778	237,159	114,790	380,336	503,685	
August	131,391	177,902	282,645	209,856	86,599	405,952	597,730	
September	119,155	181,150	248,613	213,057	96,476	382,118	643,767	
October	129,828	186,457	251,411	220,550	147,293	349,848	610,125	
November	155,138	187,554	233,342	175,961	140,731	362,766	554,859	
December	150,102	190,854	235,959	181,715	117,827	353,856	580,961	
Totals	1,540,895	2,187,724	2,947,596	2,745,535	1,549,554	3,532,606	6,110,790	2,185,135

Iron Ore Imports.

	1914.	1915.	1916.	1917.
Jan. .	101,804	75,286	89,844	97,440
Feb. .	112,574	78,773	94,315	86,314
Mar. .	68,549	88,402	96,388	95,989
April .	111,812	91,561	135,712	58,878
May .	125,659	98,974	148,599	
June .	188,647	118,575	134,154	
July .	141,838	119,468	156,755	
Aug. .	134,913	126,806	127,094	
Sept. .	109,176	173,253	109,747	
Oct. .	114,341	138,318	95,833	
Nov. .	90,222	113,544	82,257	
Dec. .	51,053	118,321	118,043	
Totals	1,350,588	1,341,281	1,325,706	338,621

Iron and Steel Imports.

	1913.	1914.	1915.	1916.	1917.
Jan. .	21,740	17,776	10,568	15,824	39,991
Feb. .	25,505	14,757	7,506	20,279	24,380
Mar. .	27,467	27,829	8,025	15,159	37,280
April .	25,742	30,585	16,565	20,175	48,055
May .	28,728	28,173	28,916	32,113	
June .	36,597	23,076	32,200	26,886	
July .	36,694	25,282	20,858	14,774	
Aug. .	18,740	28,768	27,557	32,257	
Sept. .	19,941	38,420	23,344	25,558	
Oct. .	20,840	22,754	34,319	30,170	
Nov. .	25,809	24,165	36,931	42,544	
Dec. .	26,454	9,493	35,409	44,133	
Total	317,260	289,778	282,443	275,743	149,706

Immigration Statistics.

Years mentioned refer to fiscal years ended June 30th. Aliens admitted include immigrant and non-immigrant, aliens departed include emigrant and non-emigrant.

Excess Arrivals Over Departures.

	Aliens.	Citizens.	Total.
1913	\$15,304	*61,098	754,205
1914	769,276	*82,211	687,065
1915	50,070	67,167	117,237
1916	125,941	11,197	137,138
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July, 1915 ...	11,082	3,912	14,994
August	*14,324	*804	*15,128
September ..	*1,965	866	*1,099
October	4,877	662	5,539
November ..	3,292	*802	2,490
December ..	*570	*891	*1,461
January, 1916	7,303	*1,212	6,091
February	19,440	*1,826	17,594
March	26,791	4,198	27,989
April	26,143	4,471	30,614
May	24,708	2,021	26,729
June	22,184	65	22,249
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July	18,244	3,634	21,878
August	21,413	304	21,717
September ..	29,310	1,443	30,753
October	28,339	*2,012	26,327
November ..	24,241	*183	24,058
December ..	18,791	*252	18,539
January, 1917	19,563	*1,790	17,773
February	14,145	*1,612	12,503
March	14,125	2,591	16,716
April	18,821	4,709	23,530
May	5,313	*7,325	2,012
Eleven months	212,905	*723	212,182

May 1917.

Immigrant aliens in	10,487
Non-immigrants in	5,535
Total aliens in	16,022
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Emigrant aliens out	5,462
Non-emigrant aliens out	5,347
Total aliens out	10,799
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Citizens in	5,776
Citizens out	13,301
Excess citizens out	7,525

Change in population:

Aliens	+5,313
Citizens	-7,525
Net change	-2,212

* Excess of departures.

Our Foreign Trade.

Value of merchandise imports and exports and favorable trade balance, calendar years.

	Imports.	Exports.	Balance.
1906	1,320,501,572	1,798,243,434	477,741,862
1907	1,423,169,820	1,923,426,205	500,256,385
1908	1,116,374,087	1,752,835,447	636,461,360
1909	1,475,520,724	1,728,198,645	252,677,921
1910	1,562,904,151	1,866,258,904	303,354,753
1911	1,532,359,160	2,092,526,746	560,167,586
1912	1,818,133,355	2,399,217,993	581,084,638
1913	1,792,596,480	2,484,018,292	691,421,812
1914	1,789,276,001	2,113,624,050	324,348,049
1915	1,778,596,695	3,554,670,847	1,776,074,152
1916	*2,391,654,335	*5,481,423,589	*3,089,769,254
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1914—			
June	157,529,450	157,072,044	†457,406
July	150,677,291	154,138,947	†5,538,344
Aug.	129,767,890	110,367,494	†19,400,396
Sept.	139,710,611	156,052,333	16,341,722
Oct.	137,978,778	195,283,852	57,305,074
Nov.	126,467,062	205,878,333	79,411,271
Dec.	114,656,545	245,632,558	130,976,013
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1915—			
Jan.	122,148,317	267,879,313	145,730,996
Feb.	125,123,391	298,727,757	173,604,366
Mar.	158,022,016	296,501,852	138,479,836
Apr.	160,576,106	294,745,913	134,169,807
May	142,284,851	273,769,093	131,484,242
June	157,695,140	268,547,416	110,852,276
July	143,099,620	267,978,990	124,879,370
Aug.	141,830,202	261,025,230	119,195,028
Sept.	151,236,026	300,676,822	149,440,796
Oct.	149,172,729	336,452,009	186,979,289
Nov.	155,496,675	327,670,353	172,173,678
Dec.	171,832,505	359,306,492	187,473,987
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1916—			
Jan.	184,350,942	330,036,410	145,685,468
Feb.	193,935,117	402,991,118	209,056,001
Mar.	213,589,785	410,742,034	197,152,249
Apr.	218,236,397	398,568,532	180,332,135
May	229,188,957	474,881,255	245,692,298
June	245,795,438	464,784,318	218,988,880
July	182,722,938	445,472,000	262,749,062
Aug.	199,247,391	509,778,680	310,531,289
Sept.	164,038,614	515,007,408	†850,968,794
Oct.	178,658,730	492,813,918	314,155,188
Nov.	176,988,305	516,976,359	339,988,054
Dec.	204,834,188	521,650,904	316,816,716
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1917—			
Jan.	241,707,282	*613,555,693	*371,848,411
Feb.	199,479,996	467,683,406	268,203,410
Mar.	270,218,139	553,988,239	283,770,100
Apr.	253,916,966	530,252,295	276,335,329
May	*280,561,964	550,977,215	270,415,251

High record. † Balance unfavorable.

Copper in June

Government Buys 60,000,000 Pounds of Copper at Tentative Price of 25c Subject to Investigation of Production Costs—Serious Labor Situation at Mines Causes Much Anxiety—Market Otherwise Quiet With Net Decline of 1c to 2c Per Pound.

The month of June was a trying one to the copper industry. Conflicting opinions and uncertainty as to the future which was caused by prolonged delay in the announcement of any definite settlement in negotiations pending at Washington between representatives of copper interests and the Government Commission, restricted business, especially during the last week in June. With the purchase of 60,000,000 pounds at tentatively 25c per pound, in the last few days of the month, with the understanding that further needs for the army would require 125,000,000 pounds additional, and that navy requirements will be 110,000,000 pounds more, the settlement of price was still awaiting the conclusion of the investigation being made by the Federal Trade Commission. Unofficial rumors placed the early requirements of our Allies at 300,000,000 pounds at a preferred price, but this matter was not yet definitely settled, either.

Serious strikes in various copper producing districts, at mines and smelters, which were only partially controlled at the close of the month, combined with inadequate transportation facilities also harrassed the trade, giving rise to probably exaggerated reports of a 25% decrease in output for the month—about 50,000,000 pounds. Some of the mines in the North and West were reported to be 60% idle, but with a falling off in domestic consumption, estimated at 10,000,000 pounds per month, since January 1st, and with large surplus stocks, 424,000,000 pounds on hand at smelters, in transit to refineries, and at refineries at the beginning of the year, not including 128,000,000 pounds already refined and held in stock at the refineries, there can be no doubt that ample stocks will be available for all demands.

Lower Prices Looked For.

The general opinion in the trade was that with 25c as a tentative price paid

by the Government, that the tendency of the market would be toward lower levels. At the close of the month, prompt and July shipments of Electrolytic copper were offered by producing interests at 31.00c per pound. August shipments were available at 30.00c and September deliveries at 29.00c with the possibility of shading the last named figure. These figures indicate a decline for the month of 1c to 2c per pound.

Exports.

Exports of copper from all ports in May were 45,241 tons, and it is believed the June tonnage fully sustained the monthly average established for 1917. This indicates total exports during the first half of the year to have been approximately 270,000 tons, establishing a new maximum for this period. Exports of brass plates, rods and discs were unprecedentedly heavy, the first quarter tonnage being more than 28,332 tons and not including 1,101 tons of brass scrap, were equal to one-half the entire amount exported in 1916.

London Market Stationary.

The foreign market for the month was practically unchanged at £130 for spot Standard; £129 10s for future Standard, the latter being £1 lower than at the beginning of June. Spot American Electrolytic was stationary at £142, and futures at £138 throughout the month.

Prompt and early prime Lake copper was held at 31.00c to 32.00c until June 22d, when a recession of ½c to 30.50c to 31.50c per pound was noted; this price being unchanged on June 30th. Casting copper declined 1c per pound during the month from 30.50c to 31.00c to 29.50c to 30.00c on the 29th of June.

Third quarter shipments advanced 1c per pound, from 29.50c to 30.50c to 30.50c to 31.50c by June 11th, but receded to 30.00c to 31.00c June 21st, this being unchanged at the close. Fourth

Lake Copper Prices.

Monthly average prices of Lake Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.89	14.76	13.89	24.10	29.83
Feb.	15.37½	14.98	14.72½	27.44	34.04½
Mar.	14.96	14.79	15.11	27.42	35.33
Apr.	15.55	14.68	17.43	28.91½	32.46
May	15.73	14.44	18.81	29.28½	31.90
June	15.08	14.15	19.92	27.44	31.35
July	14.77	13.73	19.42	25.81	
Aug.	15.79	12.68	17.47	26.58	
Sept.	16.72	12.43½	17.76	27.86	
Oct.	16.81	11.66	17.92½	28.37½	
Nov.	15.90	11.93	18.86	31.71	
Dec.	14.82	13.16	20.37½	33.07½	
Av.	15.70	13.61	17.64	28.17	

Electrolytic Copper Prices.

Monthly average prices of Electrolytic Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.75½	14.45	13.71	24.10	30.26
Feb.	15.27	14.67	14.57	27.46	35.22
Mar.	14.92½	14.33½	14.96	27.44	35.74
Apr.	15.48	14.34	17.09	29.31	32.19
May	15.63	14.13	18.60	29.81	32.32
June	14.85	13.81	19.71	27.49½	32.57
July	14.57	13.49	19.08	25.60	
Aug.	15.68	12.41½	17.22	27.36½	
Sept.	16.55	12.08½	17.70½	28.26	
Oct.	16.54	11.40	17.86	28.64	
Nov.	15.47	11.74	18.83	32.22½	
Dec.	14.47	12.93	20.35	33.84	
Av.	15.52	13.31½	17.47	28.46	

Casting Copper Prices.

Monthly average prices of Casting Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.57	14.27½	13.52	23.06½	28.04½
Feb.	15.14	14.48	14.17	26.03	31.73½
Mar.	14.76	14.18	14.34	25.90	32.18
Apr.	15.39	14.18	16.48	27.16	29.24
May	15.45½	14.00	17.41	27.37	30.11
June	14.72	13.65	18.74½	25.10	30.36
July	14.40½	13.34½	17.76½	23.61	
Aug.	15.50	12.27	16.46	24.67	
Sept.	16.37½	12.00	16.75	25.93	
Oct.	16.33	11.29	17.32	27.17	
Nov.	15.19	11.63	18.41	30.37½	
Dec.	14.22	12.83½	19.73	31.74	
Av.	15.33	13.18	16.76	26.51	

Sheet Copper Price Changes.

The changes in the base price of sheet copper since Feb 15, 1916 are given below, with price of Lake copper on the same date.

1916—	Sheet Copper.	Lake Copper.
February 29	34.00	28.37½
March 10	33.00	27.25
March 16	33.50	27.62½
April 3	34.50	27.62½
April 13	35.50	29.25
April 26	36.50	29.75
May 9	37.50	30.00
August 1	35.50	25.50
August 19	36.00	27.00
September 27	37.00	28.25
November 14	40.00	31.75
November 20	41.00	33.75
December 5	42.00	34.00
1917—		
February 19	44.00	35.25
April 10	42.00	33.75
April 23	40.00	30.75

Waterbury Copper Averages.

	1913.	1914.	1915.	1916.	1917.
Jan.	17.00	14.75	14.12½	24.75	32.25
Feb.	15.50	15.12½	15.25	27.75	35.25
Mar.	15.12½	15.00	15.75	28.00	35.50
Apr.	15.75	14.87½	18.50	29.00	32.75
May	15.87½	14.75	22.50	29.87½	32.00
June	15.37½	14.37½	22.50	28.25	32.50
July	14.75	14.12½	22.25	27.25	
Aug.	15.62½	13.00	19.50	27.00	
Sept.	16.87½	12.87½	18.50	28.00	
Oct.	16.87½	12.25	18.25	28.87½	
Nov.	16.25	12.25	19.37½	33.25	
Dec.	15.00	13.50	20.75	34.25	
Av.	15.83	13.91	18.94	28.85½	

Exports of Copper From the United States.

(In tons of 2,240 lbs.)

	1914.	1915.	1916.	1917.
January ..	36,018	26,193	23,663	51,322
February ..	34,634	15,583	20,648	32,265
March	46,504	30,148	26,321	51,218
April	35,079	18,738	21,654	44,975
May	32,077	28,889	16,062	45,241
June	35,182	16,976	39,595	
July	34,145	17,708	35,066	
August ..	16,509	17,551	32,190	
September ..	19,402	14,877	29,803	
October ..	23,514	24,087	33,224	
November ..	24,999	23,168	22,598	
December ..	22,166	42,426	26,486	
Totals ..	360,229	276,344	327,310	

quarter shipments June 1st were held at 28.50c to 29.50c per pound and fluctuated back and forth in a range of $\frac{1}{4}$ c per pound; the highest point being 29.00c to 30.00c on June 11th, the closing price nominally 28.75c to 29.00c with the probability of shading this at the close.

At the beginning of June, a moderate amount of quiet business was in progress and prices advanced $\frac{1}{2}$ c to $\frac{3}{4}$ c per pound on prompt and early positions, but most of the buying done was for third quarter shipment which added to the strength of this position. August shipments were said to be obtainable only through second hands which resulted in varying prices for this delivery. There were small sales of June Electrolytic at 32.50c to 32.75c with spot at 33.00c per pound. A constant but small volume of business was transacted in the second week with a decline of $\frac{3}{4}$ c to 1c per pound on prompt and June metal, but future positions grew stronger, advancing $\frac{1}{4}$ c to $\frac{3}{4}$ c per pound.

Government Purchase Announced.

In the third week, it was generally understood that a pro rata distribution of orders had been placed by the United States among producers, and that large deliveries were being made; the price to be determined later. Pending a lack of information in this particular, commercial transactions were held in abeyance. During the last week, negotiations were still going on when the purchase of 60,000,000 pounds was announced by the Government, but other business was at a standstill and prices were entirely

nominal at 32.25c to 32.50c for prompt Electrolytic. On June 30th, the Federal Department of Labor received word that the strike in the Utah district was settled and that Government agents were on the way to Montana to effect a settlement at Butte, but a new outbreak was reported to have just started at Bisbee, Arizona.

Copper Prices in June.

Day.	— New York —			London.		
	Lake.	Electro.	Casting.	Standard.		
	Cents.	Cents.	Cents.	£	s	d
1	31.50	32.75	30.75	130	0	0
4	31.50	32.75	30.75	130	0	0
5 ....	.....	.....	.....	130	0	0
6	31.50	32.75	30.75	130	0	0
7	31.50	32.75	30.50	130	0	0
8	31.50	32.75	30.50	130	0	0
11	31.50	32.75	30.50	130	0	0
12	31.50	32.75	30.50	130	0	0
13	31.50	32.62 $\frac{1}{2}$	30.50	130	0	0
14	31.50	32.62 $\frac{1}{2}$	30.50	130	0	0
15	31.50	32.62 $\frac{1}{2}$	30.50	130	0	0
18	31.50	32.62 $\frac{1}{2}$	30.50	130	0	0
19	31.50	32.62 $\frac{1}{2}$	30.25	130	0	0
20	31.50	32.37 $\frac{1}{2}$	30.25	130	0	0
21	31.50	32.37 $\frac{1}{2}$	30.25	130	0	0
22	31.00	32.37 $\frac{1}{2}$	30.25	130	0	0
25	31.00	32.37 $\frac{1}{2}$	30.25	130	0	0
26	31.00	32.37 $\frac{1}{2}$	30.00	130	0	0
27	31.00	32.37 $\frac{1}{2}$	30.00	130	0	0
28	31.00	32.37 $\frac{1}{2}$	29.87 $\frac{1}{2}$	130	0	0
29	31.00	32.37 $\frac{1}{2}$	29.75			
High ..	32.00	33.00	31.00	130	0	0
Low ..	30.50	32.25	29.50	130	0	0
Average	31.35	32.57	30.36	130	0	0

Tin in June.

**Market Fairly Steady Throughout June—Trading Restricted by Delay
In Arrival of Cables—Net Decline Here 2c Per Pound.**

While much dissatisfaction was expressed with conditions existing in the market during June, the industry really fared very well in the volume of business transacted and the firmness with which prices were held at high levels. The lack of definite information concerning progress in the investigation going on at Washington, between the various tin committees and Government officials, had a somewhat restricting influence upon trading which was increased by the delay experienced in the arrival of foreign cables, these were sometimes interrupted for several days at a time.

Of special interest to the trade was the placing of a large Bolivian loan in this market with the approval of the Department of State. The loan is to be used in railroad construction, the lack of which has caused the great difficulty experienced in transportation to this country. Bolivia is next to the Straits Settlements the largest producer of tin ore and concentrates and the American Smelting & Refining Company is already producing 650 tons of pure tin per month from them. It is expected by the end of the year to have an output of 1,000 tons per month. In another year, it is predicted, that their production will be 2,000 tons per month which will be equal to more than one-third of any probable consumption in America of this metal.

Small Arrivals.

June arrivals of tin were small (530 tons) and 3,031 tons were reported afloat. There was a net recession in prices of 2c per pound from the May closing, 64.25c, to the June closing figures, 62.25c. The London market fluctuated within a wide range of prices registering a decline of £5 on spot standard, spot Straits and shipments from the Far East on June 1st to £248 for each. Future Standard at the same time receded £4 to £246 10s. The last cable for June, received on the 28th, recorded a further decline of £4 to £244 for spot Standard while spot Straits

was down £3 to £245. Future Standard receded £5 to £241 and shipments from the Far East c.i.f. London, were £6 lower to £242. The lowest price for the month was £236 on June 12th, after which there was a gradual recovery.

Tin Committee Active—Heavy Drop in Prices Abroad.

On June 1st, tin declined to 62.75c per pound, the recession continuing to 60.50c on the 6th., the lowest point for the month. The decline was attributed to lack of demand, large arrivals and an easier feeling in regard to shipping permits from England. The submarine menace, too, seemed to be abating. Banca and No. 1 Chinese tin were in large supply and demand was good at 56.50c per pound for the former and at 55.50c for the latter. On June 6th, there was a conference at Washington between members of the sub-committee appointed by the Iron and Steel Institute, and the Tin Committee of the New York Metal Exchange and others. It was urged at this meeting that all recipients of the report blank sent out in May should fill and return them as promptly as possible in order to enable the committee to make an early decision in regard to the vital issues at stake. Abroad, there was a total decline of £18 19s in London and of £23 in the Far East, due to a misapprehension in regard to the investigation being conducted here, the matter not being fully understood.

In the following week, interest was centered in the arrangement understood to be underway between this country and England to insure adequate supplies of metal for the United States. A committee consisting of importers and consumers was appointed to confer with the Government, the object being to apportion importations fairly, and to prevent the hoarding of stocks. A very moderate business was transacted with price ranges unusually narrow, an advance of 1c per pound to

61c was followed by a fractional decline to 60.70c on June 13th, with sales of August-September shipments from the East Indies at 54.75c to 56.25c on June 19th, Banca selling well, at 3c falling to £236, fluctuated within a range of £2 back and forth to £238 5s on the 15th.

At the beginning of the second fortnight, a fair volume of business was being transacted with consumers, and prices advanced to 64c per pound by June 19th, Banca selling well, at 3c less per pound than Straits tin. Cables were long delayed and the U-boat menace again loomed large with the increasing destruction of many boats. Abroad, with the passing of the fear that the United States regulations would interfere with prices and trading through the regular channels, the market rapidly recovered, advancing £11 from £238 5s to £249 5s by June 20th.

Trading at Standstill on Account of

Absence of Cables.

As the month advanced, offerings of spot and nearby deliveries were few and hard to obtain. A short time later, trading was practically at a standstill, in the absence of cables and with no report from the Government at Washington. Toward the close of June other grades of tin than Straits were in active demand, there being a large supply at lower prices. American tin production, 650 tons per month, was all absorbed by the small jobbing trade. Banca was in good demand at 60c, English Lamb & Flagg at 55.50c and Chinese No. 1, at 54.75c per pound. The interest in future positions again revived with sales of August-September from the Far East Straits at 57c, while September-October shipments were 56.25c per pound.

Large Deliveries.

May, monthly tin statistics, were very interesting and revealed unusually large deliveries into consumption (5,749 tons). The combined deliveries of London and Holland were 31 tons more than in May 1916, while shipments from the Straits were heavier by 2,901 tons for the same month than a year ago. Australia's May shipments, however, were 312 tons less. Total shipments for the first five months of 1917, were 817 tons greater than last year during the same period of time. The visible supply June 1st, was 19,404 tons, this being an increase during the month of 1,357 tons.

Tin Prices in June.

Day.	New York.	London.		
	Cents.	£	s	d
1	62.75	248	0	0
4	61.00	239	10	0
5 .....	.....	235	0	0
6	60.50	237	0	0
7	61.00	238	10	0
8	61.00	238	15	0
11	60.75	236	10	0
12	60.62½	236	0	0
13	60.75	236	10	0
14	61.25	238	5	0
15	62.00	234	0	0
18	63.00	249	0	0
19	64.00	249	0	0
20	64.00	249	5	0
21	63.75	249	0	0
22	63.50	246	10	0
25	62.87½	243	10	0
26	62.25	244	0	0
27	62.25	245	15	0
28	62.25	244	10	0
29	62.25			
High	64.00	249	5	0
Low	60.50	235	0	0
Average	62.09	242	5	6

Tin Statistics.

Compiled by New York Metal Exchange.
(Tons of 2,240 lbs.)

	May 1917.	April 1917.	May 1916.
To Gt. Britain ..	3,522	1,470	1,415
" Continent ..	1,110	1,178	405
" U. S.	2,234	1,745	2,145
Total from Straits	6,866	4,393	3,965
Total from Australia			312
Consumption			
London deliveries	1,801	1,634	1,758
Holland deliveries	82	82	94
U. S.	5,749	4,380	5,455
Total	7,632	6,097	7,307
Stocks at close of month			
In London—			
Straits, Australia	3,404	3,637	2,512
Other kinds	359	401	1,862
In Holland			7
In U. S.	4,402	1,707	2,468
Total	8,165	5,745	6,849
Afloat close of month			
London	5,702	4,170	3,460
Banca & Billiton.	1,641	3,230	4,498
U. S.	3,896	4,902	4,807
Total	11,239	12,302	12,765
Total visible supply	May 31, 1917. 19,404	April 30, 1917. 18,047	May 31, 1916. 19,614

Straits Tin Prices In New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	50.45	37.74	34.30	41.88	44.19
Feb.	48.73	39.93	37.32	42.63	51.37
Mar.	46.88	38.08	49.99½	50.42	54.36
Apr.	49.12	36.10	47.98	51.75	55.91
May	49.14	33.30	38.78	49.15	63.29½
June	44.93	30.65	40.37	42.17	62.09
July	40.39	31.75	37.50	38.46	
Aug.	41.72	50.59½	43.39	38.54	
Sept.	42.47	32.79	33.13	38.70½	
Oct.	40.50	30.39½	33.08	41.16	
Nov.	39.81	33.50	39.37½	44.17	
Dec.	37.64	33.60	38.75	42.60½	
Year	44.32	35.70	38.66	43.48	

Visible Supplies.

Visible supplies of tin at end of each month:

	1913.	1914.	1915.	1916.	1917.
Jan.	13,971	16,244	13,901	17,041	18,169
Feb.	12,304	17,308	14,548	16,511	19,627
Mar.	11,132	16,989	15,467	18,782	20,307
April	9,822	15,447	15,785	19,739	18,047
May	13,710	17,862	14,046	19,614	19,404
June	11,101	16,027	15,927	19,363	18,059
July	12,063	14,167	16,084	18,404	
Aug.	11,261	14,452	15,127	18,042	
Sept.	12,943	14,613	15,191	16,192	
Oct.	11,857	10,894	13,154	17,415	
Nov.	14,470	11,483	16,451	21,186	
Dec.	13,893	13,906	16,216	20,737	
Avg'e	12,377	14,907	15,208	18,585	

Shipments From the Straits.

Monthly shipments of tin from the Straits
Settlements to Europe and United States:

	1913.	1914.	1915.	1916.	1917.
Jan.	6,050	5,290	5,200	6,095	4,815
Feb.	4,660	6,520	5,584	6,250	6,255
Mar.	4,810	4,120	4,970	5,170	5,134
April	4,400	4,930	5,270	4,685	4,393
May	6,160	6,900	6,759	3,965	6,866
June	4,280	5,870	6,665	6,210	4,723
July	4,770	4,975	5,606	5,410	
Aug.	6,030	3,315	4,712	4,526	
Sept.	5,160	4,973	5,296	3,270	
Oct.	5,020	4,610	4,441	5,868	
Nov.	5,560	5,155	6,713	5,380	
Dec.	5,110	6,435	5,301	4,758	
Total	62,550	63,093	66,517	61,587	
Avg'e.	5,213	5,258	5,543	5,132	

Consumption In the U. S.

Monthly deliveries of tin in the United
States exclusive of Pacific Coast:

	1913.	1914.	1915.	1916.*	1917.*
Jan.	3,700	3,600	2,300	4,452	7,177
Feb.	3,500	3,300	3,375	6,388	3,930
Mar.	5,900	4,450	3,200	4,726	4,804
April	3,450	4,300	3,200	4,292	4,380
May	3,350	3,800	5,600	5,455	5,749
June	3,800	3,650	3,900	6,398	6,398
July	3,900	3,900	5,300	4,432	
Aug.	3,600	2,900	4,500	4,335	
Sept.	3,100	3,600	4,300	4,025	
Oct.	3,700	3,700	4,900	4,556	
Nov.	2,800	2,600	2,975	3,165	
Dec.	3,100	1,900	5,200	4,082	
Total	43,900	41,700	48,750	56,216	
Avg'e.	3,658	3,475	4,062	4,685	

Increased Costs of Zinc Mining and Milling Supplies.

The following list of the cost of supplies used in milling and mining zinc was compiled by Mr. W. B. Shackelford, Chairman of the Metals Committee of the Southwest Missouri Mine Safety and Sanitation Association. It compares the costs in 1914 with those of the present year and shows, on a percentage basis, what the increases have been.

	1914.	1917.	Increase.
Coal	3.10	3.60	71%
Dynamite 40% pulp	11.00	18.25	66%
40% gelatine	11.50	20.50	78%
80% gelatine	15.50	31.75	105%
Fuse, per case 6000 feet	24.75	37.86	53%
Caps, No. 6 1,000 lot	7.57	14.58	92%
Screen jackets—Light per sq. ft. ....	.18	.60	233%
Heavy per sq. ft. ....	.22	.72	227%
Slotted jig sheets .....	.30	.80	166%
Sheet steel spouting, per joint	3.00	6.00	100%
Elevator cups, per inch .....	.03	.07	133%
Sheet steel made to order, per pound ..	.05	.10	100%
Elevator bolts 1½x1-inch, per 100 .....	.70	1.40	100%
Elevator bolts 1½x1¼-inch, per 100	1.00	2.00	100%
Hard iron, jaws, shells & side plater per lb.	.02½	.04½	80%
Belting, rubber, first quality	50-10-5%	45%	29%
Belting, rubber, second quality	60-10%	50-5%	32%
Belting, canvas	70%	60%	33%
No. 2 carpenter scoops, per doz	5.50	11.00	100%
Pipe, black, base	75%	34%	160%
Tee rail No. 8, per ton	35.00	80.00	129%
Track spikes, 1½x2½, per keg	6.50	13.50	107%
Fittings.—Malleable, off list	65%	40%	70%
Cast iron, pe. list	65%	30%	100%
Jenkins brass valves	60%	35%	60%
Lukenheimer Clip Gate Valves..	50%	25%	50%
Drill steel, solid, per lb. ....	.07¼	.16	120%
Drill steel, hollow, per lb. ....	.10	.23	130%
Rubber wire wound air hose 1-inch, per ft.	.25	.35	40%
Wearaway iron, per lb. ....	.05	.15	200%
Tool steel, per lb. ....	.08	.20	150%
Tool steel, high speed .....	.60	3.50	480%
Hammers, No. 8 rock, each .....	.55	1.12	103%
Machine bolts, off list	60%	25%	87%
Carriage bolts, off list	60%	25%	87%
Carbide, Union, per ton	82.00	90.00	10%
Galv. Corg Iron No. 28, per sq.	3.50	10.00	186%
Nails, per keg	2.35	5.25	123%
Drill cable, per lb. ....	.18	.37½	108%
Wire cable, per ft.	50-10%	15-5%	80%
Manila rope, base per lb. ....	.15	.35	133%
Perfection gates, 2-inch, per doz.	8.00	12.00	50%
Dart Unions	60%	35%	62½%
Common bar iron, base, per cwt.	2.25	5.50	100%
Common soft steel, per cwt.	2.25	5.50	100%
No. 4 ballbutt, per lb. ....	.08½	.15	76%
Jig wire, per sq. ft. ....	.20	.28	40%
Trim pipe wrenches	75%	60%	60%
Wood pulleys	60-10%	50%	40%
Steel pulleys	40%	15%	41%
White waste, per lb. ....	.09	.17	89%
Estimated advance in crushers and rolls			75%
Oil.—Caster, machine .....	.13½	.235	74%
Gas engine oil .....	.24	.37½	54%
Cylinder oil .....	.27	.35	21%
Rock engine oil .....	.15½	.20	29%
Compressor oil .....	.20	.25	25%
Miners' wax in cakes .....	.033½	.0615	64%
Miners' wax in bulk .....	.0338	.0565	67%
Gasoline .....	.11	.20	81%
Coal oil .....	.06	.08	33
Mortgage increase of all supplies			95%

Spelter in June.

Government Pays 13.50c for 23,250,000 Pounds of High Grade Spelter; Two Cents More Than on Previous Purchase—General Situation Very Unsatisfactory—Market Quiet With Prices Off $\frac{3}{8}$ c On All Deliveries.

The June spelter market was even more unsatisfactory to the trade than were the markets for other metals, all of which suffered some restriction in the volume of business transacted owing to the uncertainty that prevailed as to future conditions and prices. The placing of a large order by the Government for high grade spelter toward the end of the month—at an advance of 2c per pound to 13.50c, over the price paid in May for a smaller contract—failed to stimulate buying while the price of 16c per pound for zinc sheets, announced by the Government was considered adversely by some in the trade as tending to encourage a wrong attitude in the minds of producers in regard to the provision of ample supplies for the Government for its war-time needs. The absence of demand on the part of consumers for prompt and near-by metal was marked, the strength of future positions, over the earlier deliveries being undiminished until very near the close when there was a slight weakening in prices, which, however, were still held at a premium. Brass special was the one exception to the general dullness and sold at premiums of $\frac{1}{2}$ to $\frac{3}{4}$ c during the greater part of the month. The minimum price for this grade was 10c after June 7th.

Zinc ores remained firm and strong at \$70 to \$80 per ton, but with a decline foreshadowed in the last few days of the month.

Prices declined from the May closing, 9.55 to 9.67 $\frac{1}{2}$ c for prompt and June, 9.55 to 9.80c for July and third quarter; 9.55 to 9.67 $\frac{1}{2}$ c for fourth quarter New York and 9.37 $\frac{1}{2}$ to 9.50c for prompt and June; 9.37 $\frac{1}{2}$ to 9.62 $\frac{1}{2}$ c for July and third quarter; 9.37 $\frac{1}{2}$ to 9.50c for fourth quarter East St. Louis, to 9.17 $\frac{1}{2}$ c for prompt, July and third quarter, 9.17 $\frac{1}{2}$ to 9.42 $\frac{1}{2}$ c for fourth quarter New York and 9.00c for prompt July and third quarter, 9.00 to 9.25c for fourth quarter East St. Louis—a total recession of $\frac{3}{8}$ c per pound on the vari-

ous deliveries.

Foreign Market Unchanged.

Exports from all ports were 18,553 tons. The foreign market remained unchanged at £54 and £50 for spot and futures respectively.

During the first week, attention was called to the 25% decrease in the production of galvanized sheets since the war began, due to the high prices of spelter and steel. Prices on all positions remained firm and unchanged but the volume of business transacted was not large. Brass special for prompt shipment at 9.87 $\frac{1}{2}$ to 10c East St. Louis was in very fair demand.

Three New Smelters Erected.

In the following week, brass special was more active and the minimum price rose to 10c per pound. Reports of the erection of new spelter plants,

Spelter Prices in June.

Day.	New York.	St. Louis.	London.		
	Cents.	Cents.	£	s	d
1	9.61 $\frac{1}{4}$	9.43 $\frac{3}{4}$	54	0	0
2	9.61 $\frac{1}{4}$	9.43 $\frac{3}{4}$	54	0	0
3 .....	.....	.....	54	0	0
4	9.61 $\frac{1}{4}$	9.43 $\frac{3}{4}$	54	0	0
5	9.61 $\frac{1}{4}$	9.43 $\frac{3}{4}$	54	0	0
6	9.61 $\frac{1}{4}$	9.43 $\frac{3}{4}$	54	0	0
7	9.61 $\frac{1}{4}$	9.43 $\frac{3}{4}$	54	0	0
8	9.61 $\frac{1}{4}$	9.43 $\frac{3}{4}$	54	0	0
11	9.61 $\frac{1}{4}$	9.43 $\frac{3}{4}$	54	0	0
12	9.61 $\frac{1}{4}$	9.43 $\frac{3}{4}$	54	0	0
13	9.61 $\frac{1}{4}$	9.43 $\frac{3}{4}$	54	0	0
14	9.48 $\frac{3}{4}$	9.31 $\frac{1}{4}$	54	0	0
15	9.48 $\frac{3}{4}$	9.31 $\frac{1}{4}$	54	0	0
18	9.48 $\frac{3}{4}$	9.31 $\frac{1}{4}$	54	0	0
19	9.42 $\frac{1}{2}$	9.25	54	0	0
20	9.42 $\frac{1}{2}$	9.25	54	0	0
21	9.42 $\frac{1}{2}$	9.25	54	0	0
22	9.36 $\frac{1}{4}$	9.18 $\frac{3}{4}$	54	0	0
25	9.36 $\frac{1}{4}$	9.18 $\frac{3}{4}$	54	0	0
26	9.17 $\frac{1}{2}$	9.00	54	0	0
27	9.17 $\frac{1}{2}$	9.00	54	0	0
28	9.17 $\frac{1}{2}$	9.00	54	0	0
29	9.17 $\frac{1}{2}$	9.00	54	0	0
High	9.67 $\frac{1}{2}$	9.50	54	0	0
Low	9.17 $\frac{1}{2}$	9.00	54	0	0
Average	9.45	9.28	54	0	0

two in the Arkansas gas fields and one in Idaho, gave indications of increased production in the future. Sales of third and fourth quarter metal were reported at 9.50c East St. Louis basis, with prompt offered at 9.37½c per pound, without attracting buyers. Producers were confining sales to current production in the belief that prices must go higher. It was understood that consumers who held Government contracts for shell and cartridge cases had been instructed to obtain their spelter needs from certain producers and that prices would be arranged later. At the same time, the entire lack of trading led some sellers to press sales in their effort to dispose of near-by deliveries.

At the beginning of the second fortnight, there was the first cut in prices made by some sellers to 9.42½ to 9.55c for prompt and June shipments; 9.42½ to 9.67½c for July and third quarter; 9.55 to 9.67½c for fourth quarter New York, with 9.25 to 9.37½c for prompt and July; 9.25 to 9.50c for July and third quarter, 9.37½ to 9.50c for fourth quarter, East St. Louis. Dealers were out of the market and had been for some time. There was an accumulation of stocks at smelters and some surplus at New York also, in the absence of export orders. On the 19th, a further reduction was made in the hope of obtaining business, to 9.30 to 9.55c for prompt and June, New York, and to 9.12½ to

9.37½c East St. Louis with small, if any response. Brass special, however, was still selling at premiums of ½ to ¾c per pound.

The Government's Purchase.

On the 26th, the long-hoped-for news from Washington, was announced in letters to producers from the Council of National Defense, that the Government would purchase 23,250,000 pounds of high grade spelter at 13.50c per pound in carload lots with freight allowed to New York. This price is a 2c per pound advance over the purchase made in May. It was understood further, that this price will not necessarily be the one to be paid on any future requirements. Instead of stimulating prices on prime Western spelter as the trade had hoped, a further decline was noted, to 9.17½c for prompt June; 9.17½ to 9.30c for July and third quarter, 9.42½ to 9.55c for fourth quarter New York. The East St. Louis basis was 9.00c for prompt June, 9.00 to 9.12½c for July, 9.00 to 9.25c for third quarter, 9.25 to 9.37½c for fourth quarter. The closing prices with the exception of the fourth quarter, were 9.17½c in all positions, New York. The fourth quarter ranged from 9.17½ to 9.42½c, while the East St. Louis basis was 9.00c for other than the fourth quarter position, which ranged from 9.00 to 9.25c, the only change being the fractional weakness in the fourth quarter position.

Spelter Prices in St. Louis.

Extreme price fluctuations of Prime Western Spelter, East St. Louis delivery, by months and years.

	1914			1915			1916			1917		
	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.
Jan.	5.25	5.10	5.14	7.62½	5.55	6.33	19.25	17.12½	18.01	10.87½	9.00	9.82
Feb.	5.35	5.20	5.27	10.00	7.65	8.62	21.00	18.50	19.92	10.75	9.37½	10.32
Mar.	5.22½	5.12½	5.15	11.00	8.87½	9.80	20.62½	16.25	17.91½	10.87½	10.37½	10.65
April	5.12½	4.85	5.03	14.00	9.25	11.22	19.25	17.50	18.44	10.50	8.75	9.55
May	5.00	4.90	4.96	21.00	13.00	15.52½	17.75	13.12½	15.55½	9.50	9.12½	9.30½
June	4.97½	4.82½	4.93	27.00	17.50	22.14	13.87½	10.87½	12.62	9.50	9.00	9.28
July	4.95	4.80	4.84	22.75	17.75	20.53	9.75	8.20	8.92			
Aug.	6.00	4.70	5.45	18.00	10.75	14.19	11.00	8.62½	9.52½			
Sept.	5.85	4.95	5.33	15.25	13.37½	14.10½	9.62½	8.50	9.06			
Oct.	5.00	4.60	4.81	14.62½	13.25	13.89	10.37½	9.25	9.83			
Nov.	5.20	4.80	4.97	19.00	14.37½	16.87½	13.12½	10.25	11.75			
Dec.	5.65	5.20	5.49	18.00	14.75	16.72	13.12½	9.62½	11.11			
Year	6.00	4.60	5.11½	27.00	5.55	14.16	21.00	8.30	13.77	*10.33	*9.28	9.83*

* Six months.

Spelter Prices in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	7.23	5.33	6.52	18.18½	9.97
Feb.	6.49	5.46	8.86½	20.09	10.49
Mar.	6.29	5.35	10.12½	18.10	10.82½
April	5.79	5.22	11.51	18.61½	9.73
May	5.51	5.16	15.82½	15.93	9.48
June	5.23½	5.12	22.62½	12.80	9.45
July	5.41	5.03	20.80	9.70	
Aug.	5.80	5.63	14.45	9.10	
Sept.	5.83	5.52	14.49	9.23½	
Oct.	5.47	4.99½	14.07	10.01	
Nov.	5.34	5.15	17.04	11.92½	
Dec.	5.22	5.67	16.91	11.28½	
Av.	5.80	5.30	14.44	13.75	

Waterbury Spelter Averages.

	1913.	1914.	1915.	1916.	1917.
Jan.	7.56	5.54	6.55	22.25	13.05
Feb.	6.81	5.70	11.85	22.70	13.80
Mar.	6.56	5.59	12.15	23.15	13.45
April	6.08	5.50	13.85	23.20	11.85
May	5.77	5.28	20.55	21.20	11.05
June	5.50	5.37	23.60	17.40	10.85
July	5.61	5.26	24.90	15.20	
Aug.	5.99	5.66	19.30	13.60	
Sept.	6.13	5.91	17.85	13.70	
Oct.	5.74	5.23	16.85	12.95	
Nov.	5.60	5.38	19.36	14.10	
Dec.	5.44	5.90	21.15	13.20	
Av'ge	6.06½	5.53½	17.50	17.72	

Sheet Zinc Price Changes.

The following table gives the changes in the base price of sheet zinc since June 27, 1916, together with the price of spelter ruling on the same day.

	1916—	Sheet Zinc.	Spelter St. Louis.
June 27	18.00		11.37½
July 6	17.00		9.37½
July 11	15.00		8.62½
October 26	16.00		10.12½
November 10	17.00		11.12½
November 17	18.00		12.00
November 20	19.00		12.12½
November 24	20.00		12.87½
November 24	21.00		12.87½
April 25	20.00		8.57½
April 26	19.00		9.00

Exports of Domestic Spelter and Sheets--Short Tons.

	1916		1917	
	Tons.	Value.	Tons.	Value.
Jan.	10,483	\$3,601,970	15,351	\$4,455,110
Feb.	10,328	3,638,003	15,551	3,933,047
Mar.	8,171	2,902,472	17,408	4,927,420
April	9,133	3,461,914	12,675	3,327,809
May	8,583	3,093,620		
June	11,309	4,036,656		
July	12,708	4,230,805		
Aug.	18,661	5,549,581		
Sept.	19,255	5,150,808		
Oct.	19,994	5,758,357		
Nov.	18,991	5,291,493		
Dec.	15,652	4,774,158		
Total	163,268	\$51,489,837		

Lead in June.

Government Buys 8,000 Tons at 8.00c Per Pound—Market Strong Throughout the Month—Trust Price Advanced 1c Per Pound—Lead Ores Up \$10.

The effect of the uncertainty existing as to what the Government findings would decide in regard to the amount of its requirements and the prices to be paid was less pronounced in the lead industry than in some other metal trades early in the month. Activity in buying being a little less keen, perhaps, but the demand was good and sales satisfactory to the majority. Later, however, some anxiety was felt which held business in abeyance but with the purchase on June 22d. of 8,000 tons at 8c per pound, by the Government for delivery during July, an easier tone developed with freer offerings and prices fractionally reduced.

Two advances—a total of 1c per pound—were made in the official base price of lead to 11c New York and 10.92½c per pound St. Louis, by the American Smelting & Refining Company, which immediately resulted in an advance to 12c on June 8th for spot and June shipment lead by independent producers and to 11.50c to 12c for July.

Lead ores were strong, advancing from \$120 per ton, \$5 at a time, to \$130 on June 11th, after which no change was made. Exports from all ports were 524 tons. The foreign market was unchanged at £30 10s.

The total decline for the month from the highest price, (12.25c) to the lowest (11.25c) per pound, was 1c per pound, but the net recession from June 1st to June 30th, was only ¼c per pound.

During the first week, while activity was not quite so great as in May, transactions were satisfactory at unchanged prices but with two advances of ½c each per pound in the "Trust" price, outside prices were also advanced ½c to 12c for spot and June metal, and to 11.50c to 12c for July at New York and St. Louis, the prices coming together, and a fair volume of business was transacted on the next day, June 9th. In the following week, the delay at Washington began to be felt, restrict-

ing business somewhat, but prices were further advanced to 12.25c for spot, the scarcity of metal being the cause, it was said. July metal was 11.75c to 12.00c and August 11.50c to 11.75c per pound New York. By the 20th, with no news received from Washington, business came to a halt, a ¼c per pound concession being made in offerings which, however, did not meet with any success.

Two days later, the Government purchase was announced for delivery to be completed by August 1st. Immediately following, there were increased offerings and the tension was relieved with prices down another fraction. About this time, the extremely high prices prevailing for lead had attracted considerable attention, and an investigation was begun by enterprising producers of spelter to discover if there

Lead Prices in June.

Day.	New York*	St. Louis.	London.	
	Cents.	Cents.	£	s d
1	11.50	11.37½	30	10 0
2	11.50	11.37½	30	10 0
3	.....	.....	30	10 0
6	11.50	11.37½	30	10 0
7	11.75	11.50	30	10 0
8	12.00	11.75	30	10 0
11	12.12½	11.87½	30	10 0
12	12.12½	11.87½	30	10 0
13	12.12½	11.87½	30	10 0
14	12.12½	11.87½	30	10 0
15	12.12½	11.87½	30	10 0
18	12.12½	11.87½	30	10 0
19	12.12½	11.87½	30	10 0
20	12.00	12.00	30	10 0
21	12.00	12.00	30	10 0
22	11.87½	11.87½	30	10 0
25	11.87½	11.87½	30	10 0
26	11.87½	11.75	30	10 0
27	11.75	11.62½	30	10 0
28	11.50	11.37½	30	10 0
29	11.37½	11.25		
High	12.25	12.00	30	10 0
Low	11.25	11.00	30	10 0
Average	11.87	11.71	30	10 0

* Outside market.

were not some uses for which a zinc substitute that would cost less than lead, might not be found, and zinc pipe was mentioned as a probable competitor of lead pipe if found satisfactory. During the next few days, the consuming demand having fallen off, prices

further receded. The market was in a very quiet condition at the close of June with prices for spot and July at 11.25c to 11.50c, August 11.25c to 11.37½c, with St. Louis 11.00c to 11.50c for spot and July, and 11.00c to 11.25c for August.

Review of Joplin Zinc and Lead Ore Markets For June.

The market for zinc ores remained practically stationary for the first four weeks of the month and shaded off \$5 per ton on the last week. The base range held to \$70 to \$80 for 60% grades and dropped to \$65 to \$75 at the month end. Calamine ores followed the same trend except for the difference in base which was \$40 to \$55 for 40% zinc.

Shipments were exceptionally good throughout the month, they too holding to a steady tonnage weekly. The average weekly shipment of blende ores for the five weeks reached 9,000 tons and for calamine 886 tons or nearly 10,000 tons for both classes of ores. It is safe to say that this figure was reached as there is enough unreported ore to make up this total. This practically means a shipment of 50,000 tons for the month of June, a remarkable shipment of ores in the face of the low price level maintained during the period.

This shipment record had its effect upon the surplus stock showing a material reduction in the tonnage even in the face of the increased production predicted and probably to a slight degree verified. The stocks at the beginning of the month were 18,500 tons as compared with 14,875 tons at the end of the period.

Lead ore prices featured the month's market. Starting in at the \$125 level it advanced the second week of the month and held to \$130 for three weeks, then shaded down to \$120 at the end of the month. This was a record price maintenance and was the one bright spot to the mine operators of the field.

Shipments of this class of ores averaged 1,210 tons per week for the five weeks or a small fraction over 6,000 tons for the month. In spite of the higher prices, however, the shipments did not reach as high as the production,

as the mine operators speculated on a still further advance and did not ship to the full limit of their output weekly. As a result the surplus stocks show an increase from 495 tons to 1,960 tons. The lead ore product in value went over the three-quarter million mark, registering \$762,302.

Blende values reached \$3,338,451, and calamine \$181,538, a combined value for zinc ores of \$3,519,989. The total value for both ores reached \$4,282,281.

The first half year shows a remarkable gain in tonnage for zinc ores over the same half year of 1916. The actual gain in blende ores is 35,813 and in calamine 2,740 tons. This is the equivalent of 20% increase in production. Stocks of blende ores are less this year by 8,800 tons which shows a healthy local condition statistically. There is no such gain in values. There is on the other hand a direct loss in spite of the increased tonnage sold. The comparison shows a value for blende ores in 1916 of \$17,085,500 while in 1917 it was only \$16,337,508. For calamine the values in 1916 were \$1,019,605, as compared with \$746,998 in 1917. The average price for blende ores was practically \$20 per ton less in 1917 than in 1916 and for calamine \$27.50 less in 1917 than in 1916.

Lead ores show a gain in value as well as in production. The output shipped for the first half year was 32,352 tons valued at \$3,641,932 in 1917 which compares with 27,943 tons valued at \$2,503,360 in 1916. The gain in lead ore prices in 1917 over 1916 amounts to \$22.91 per ton. The gain in lead values approximately makes up the losses sustained by the operators on zinc ores.

Labor conditions continue unchanged. There is a scarcity of labor with no outlook for early relief.

Aluminum in June.

Government Buying the Only Feature of Interest—Market Very Dull but Firm.

Outside of United States Government buying for camp equipment—4,000,000 tent stakes, 1,000,000 canteens and cups—the demand for aluminum in June was comparatively small. The Aluminum Company of America offered to furnish all Government requirements at 27.50c per pound, this price being the average price for ten years plus 2c per pound. The market was dull but prices were steady and firm at 59 to 61 for No. 1 virgin 98-99% pure, and at 56 to 58c per pound for 98-99% pure remelted, until in the last few days, when each registered a decline—2c per pound to 57 to 59c for No. 1 virgin and 1c per pound to 55 to 57c for 98-99% pure remelted; No. 12 alloy remelted, however, advanced 1c per pound from 41 to 43c to 42 to 44c on June 7th, remaining unchanged thereafter, and at the close.

News of increased productive capacity to 155,000,000 pounds annually in the United States and to 20,000,000 pounds in Canada, in order to meet Government war-time requirements, was published early in the month, in the announcement of completed improvements and extensions to plants as well as the building of new ones at various places in the United States by the Aluminum Company of America, which has no competitor in the refining of aluminum in this country. Since the beginning of the war, when importations ceased, the entire needs of this metal in America have been supplied by the Aluminum Company of America. Before the war, importations from France and England supplied about 40% of the consumptive demand in the United States.

Antimony in June.

Large Arrivals and Small Demand Cause Decline of 4½c Per Pound on Prompt Metal; Futures Firmer With Fair Demand—Month Closes With Market at Standstill.

Receding prices due to large arrivals of antimony, combined with small demand for prompt metal marked the month of June in the antimony trade. The strength of future positions over the prompt position, noted in May, was continued by the active demand for such positions until in the closing week when there was a decided falling off in such business. Anticipation of Government buying was evident in the cheerful expectations of renewed activity near the close of the month.

A total decline of 4.25 to 4.75c per pound for the month, on prompt metal from 22.00 to 23.00c June 1st to 17.75 to 18.25c on June 29th, was registered. Future positions declined 1.50 to 1.75c per pound from 19.50 to 20.50c for June, 18.50 to 19.00c for July and from 17.50 to 18.00c for August to 17.75 to

18.00c for July and 17.25 to 17.50c for August positions.

At the beginning of the month, the market suffered from the operations of speculators who paid small attention to actual values—as is the habit of speculators—which unsettled trade conditions, a decline of ½c on prompt and June occurring on June 1st. From day to day during the first week concessions were made in the hope of attracting consumers for prompt antimony without success, but future positions, June, July and August shipments from the Orient were in active demand at 15.75c, 15.25c and 15c, c.i.f., New York, respectively.

In the second week, the price of prompt metal was only 1c per pound over July; 1½c over August and 2c over September. Active trading shift-

ed to August, September and October shipments from the Orient, while dullness continued in other positions. On June 14th, a large volume of business was reported, with interest centered in June, July and August shipments from the Orient at prices unchanged. In the following week there was some falling off in transactions and a feature of unusual interest on the 21st, was the offering of Cookson's antimony at 22c per pound, delivered duty paid, New York. This created an impression that the British Government has lifted the embargo on this metal which was not formally verified.

In the last week, the market was at a standstill and prices on all deliveries receded with unsuccessful pressure made by some dealers to sell prompt antimony which was in large supply without any demand.

The foreign market was more interesting than usual because of more frequent letters giving details of business. Prices for large quantities of English Regulus continued at £85 for delivery against munitions work, with small premiums asked for retail lots. Spot metal was very scarce. As England is not self-supporting in regard to antimony, but makes regular importations of both metallic and crude antimony from the Orient, exportations to this country from there, are of small importance in this market. Advices from China report productive costs at nearly double what they were before the war, primarily due to the change in the value of Chinese currency, but partly due to the advance in the price of chemicals and other supplies used by antimony smelters which are reported to be 100% higher in some instances.

Aluminum and Silver Prices.

— New York —
Aluminum. — Silver —

	1916.	1917.	1916.	1917.
Jan. ...	54.33	60.00	56.77½	75.63
Feb. ...	57.50	58.05½	56.75½	77.57
Mar. ...	60.25	59.23	57.93½	73.86
April ...	60.00	60.00	64.41½	73.88½
May ...	60.00	60.00	74.27	74.74½
June ...	62.09	59.85	65.02½	76.93½
July ...	60.15		62.94	
Aug. ...	59.48		66.08	
Sept. ...	61.90		68.51½	
Oct. ...	64.55		67.85½	
Nov. ...	64.80		71.60	
Dec. ...	63.40		75.76½	
Average	60.73		65.66	

Lead Prices in New York.

Based on American Smelting & Refining Company's quotations on 50 ton lots.

	1913.	1914.	1915.	1916.	1917.
Jan. ...	5.35	4.11	3.74	5.94	7.81
Feb. ...	4.35	4.06	3.82	6.23	8.34
Mar. ...	4.35	3.97	4.03	6.83	8.98
April ...	4.40	3.82	4.20	7.50	9.00
May ...	4.36	3.90	4.23½	7.50	9.71
June ...	4.35	3.90	5.87½	7.02	10.76
July ...	4.37	3.90	5.74	6.54	
Aug. ...	4.63	3.90	4.75	6.25	
Sept. ...	4.75	3.86	4.62	6.75	
Oct. ...	4.45	3.54	4.59½	7.00	
Nov. ...	4.34	3.68	5.15	7.00	
Dec. ...	4.06	3.80	5.34½	7.44	
Av. ...	4.40	3.87	4.67½	6.83	

Lead Prices in St. Louis.

Extreme Fluctuations of Soft Missouri Lead in St. Louis.

—1914—			—1915—			—1916—			—1917—		
High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.
Jan. 4.10	3.95	3.99½	3.65	3.50	3.57	6.00	5.45	5.80	8.25	7.30	7.58
Feb. 4.10	3.85	3.95	3.80	3.62½	3.72	6.37½	6.00	6.17	10.00	8.00	9.04
Mar. 3.87½	3.65	3.83½	4.12½	3.82½	3.98	8.25	6.40	7.46	10.00	9.25	9.53
April 3.80	3.65	3.70	4.15	4.07½	4.11	8.12½	7.32½	7.67	9.75	9.00	9.26
May 3.82½	3.77½	3.81	4.45	4.10	4.16	7.45	7.10	7.28	11.50	9.75	10.52
June 3.82½	3.77½	3.80	7.50	4.80	5.76	7.20	6.62½	6.77	12.00	11.00	11.71
July 3.77½	3.72½	3.75	5.67½	5.30	5.52	6.67½	6.00	6.20			
Aug. 3.75	3.70	3.73½	5.20	4.30	4.59	6.75	5.75	6.19			
Sept. 3.75	3.55	3.67	4.82½	4.35	4.53	6.95	6.50	6.71			
Oct. 3.55	3.35	3.39½	4.82½	4.40	4.51½	6.90	6.85	6.87½			
Nov. 3.82½	3.37½	3.58	5.22½	4.82½	5.08	7.25	6.85	6.96			
Dec. 3.70	3.60	3.67	5.42½	5.10	5.26½	8.00	7.20	7.53			
Year 4.10	3.35	3.74	7.50	3.50	4.57						
Six months.						8.25	5.45	6.80	*10.25	*9.05	*9.61

Aluminum, Silver, and Antimony Prices in June.

—New York—			
Day.	Aluminum. Cents.	Silver. Cents.	Antimony. Cents.
1	60.00	74.87½	22.50
2	60.00	75.12½	22.50
3	60.00	75.25	21.25
4	60.00	75.12½	21.25
5	60.00	75.12½	21.25
6	60.00	75.12	20.75
7	60.00	75.12	20.75
8	60.00	75.62	20.50
9	60.00	75.75	20.50
10	60.00	76.17½	20.25
11	60.00	77.00	19.75
12	60.00	77.00	19.75
13	60.00	77.00	19.75
14	60.00	77.00	19.75
15	60.00	77.00	19.75
16	60.00	77.00	19.75
17	60.00	77.87	19.75
18	60.00	77.87	19.50
19	60.00	77.87	19.50
20	60.00	78.00	19.25
21	60.00	78.50	19.25
22	60.00	78.50	19.25
23	60.00	78.00	18.75
24	60.00	78.00	18.75
25	60.00	78.00	18.75
26	60.00	78.00	18.75
27	60.00	78.00	18.75
28	59.00	78.50	18.50
29	58.00	77.87	18.00
High	61.00	78.50	25.00
Low	57.00	76.87	17.75
Average	59.85	77.00	19.77

Imports of Aluminum.

(In tons of 2,000 lbs.)

	1913.	1914.	1915.	1916.	1917.
Jan.	1,590	616	636	425	1
Feb.	996	615	291	324	14
Mar.	1,007	741	383	223	2
April	1,773	678	153	406	3
May	1,169	586	209	696	
June	880	548	893	325	
July	1,216	709	356	208	
Aug.	668	736	245	106	
Sept.	529	636	521	12	
Oct.	560	1,283	93	247	
Nov.	528	406	61	348	
Dec.	677	516	426	4	
Total	11,593	8,090	4,267	3,324	

Exports of Domestic Lead.

(In tons of 2,000 pounds.)

	—1916—	—1917—
Jan.	7,192	\$790,447
Feb.	10,246	1,392,624
Mar.	8,585	1,068,459
April	5,870	857,095
May	7,558	1,027,273
June	7,167	1,062,616
July	9,008	1,276,316
Aug.	7,542	995,724
Sept.	15,633	2,012,413
Oct.	9,396	1,303,934
Nov.	6,402	887,429
Dec.	5,866	833,873
Total	100,465	13,508,293

STEEL AND METAL DIGEST

EDITORS

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Patriotism, Business Regulation and Taxation

War is an awful calamity, but like all other forms of suffering, it often brings in its train, results that more than make up for the material loss. A crisis in the individual life or in a nation's life depends for its effects and after results on how the situation is faced, bringing out as it does every weakness and every virtue. We have seen this illustrated during the past three years in the nations of Europe and we may expect the same in our case. Looking back over the past four months there is no cause for discouragement. Our weaknesses, especially in the matter of preparedness, the inability of the machinery of a democratic government instantly to change from peaceful activities to war necessities, and the mixed character and ideals of our population, have been clearly evidenced. But there has also been brought into sight the inherent economic strength and patriotism of the nation, the belief in its institutions, the willingness to trust our rulers and to obey their instructions to the limit, not because everything they may order meets with our approval, but because in a true democracy like ours, the action of our rulers is the action of the people.

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ability of the machinery of a democratic government instantly to change from peaceful activities to war necessities, and the mixed character and ideals of our population, have been clearly evidenced. But there has also been brought into sight the inherent economic strength and patriotism of the nation, the belief in its institutions, the willingness to trust our rulers and to obey their instructions to the limit, not because everything they may order meets with our approval, but because in a true democracy like ours, the action of our rulers is the action of the people.

One of the benefits so far from our entry into the war has been to bring the business interests of the country and the Government into a new relationship. For years it has seemed as if business and our legislators were in opposing camps, the former distrustful as to the ability of Washington to legislate understandingly to business needs and conditions, and on the part of the former a feeling of suspicion and antagonism which more than once has been shown in the laws that have been

put into effect. For the change that has taken place our captains of industry and business as a whole deserve credit. We doubt if at any time or in any country there has been such a whole-hearted patriotism exhibited as the business interests have shown in the past four months. There has been no holding back or reluctance to serve the nation. In every direction these interests have eagerly placed their facilities, powers and services at the disposal of the Government. For months, not their own affairs, but the needs of the nation have absorbed their thoughts and actions. Their attitude has been simply splendid, and we are confident it is not being lost on the nation at large. It is being reflected in a new moulding of economic and political thought, and it is bound to be of both moral and material importance to the whole country. It is a co-operation between all departments of the Government and the entire business structure, and with this accomplished, we can face our foes with confidence as to the final outcome. Business has been quick to see that it was necessary, but on the other hand the response of some of the people in general, and some of our wage earners in particular has left something to be desired. It has not come from any lack of patriotism, but from a slowness of thought, a failure to grasp what our entry into war means. Thus we find that although there is no holding back when orders are given, there has not been the rush to offer services, as in the case of the business interests, and in many cases working interests have seemed to take advantage of the situation to increase their demand for higher pay, and the worst of all things in the world in a crisis like the present, shorter hours. It has been said the reason is that some of our population have not got their hearts in the war yet, it has not come home to them, and probably will not until American blood is poured out on the battle fields of Europe. Then we may see sweep over the land that fire of war fever and appreciation of what we are fighting for, as was the case with our fathers in the Civil War.

If before peace comes we are really to be in the struggle, not only econom-

ically, financially and politically as at present, but to physical suffering and death, the blood of those who fall will be the seed of something different from what some consider us to be, "something of everything," instead of what a nation must be "everything of something". We have had nothing to weld us into a single unit for generations. Prosperity, careless living, thinking only of our individual interests, a country to make a living in under the protection of liberty, has been, we fear, up to the present the attitude of some millions who have given up their former nationalities to become American citizens. But they are to learn that the citizenship they have so easily relinquished is not the kind of citizenship this country demands. It must be a bond that in comparison, all we have, even life itself, is as nothing to its claims. We believe if the war lasts another year, among its most valuable results will be to make the American nation so real, and the citizenship in it such a sacred thing, that we will be careful whom we admit into its privileges and obligations; a citizenship in which there is no room for divided allegiance even in sentiment or thought. This is what is being demonstrated in France, England and Germany to-day.

It must be remembered that our greatest aid in this war must be financially and industrially, and for that reason the country must be kept prosperous. It is with our pocketbook, our farms, mines and factories that our greater part of the war is to be waged. As care is taken with the physical and mental condition of the soldier in the field, so care must be taken with the burdens placed on our economic shoulders by legislation.

Business will struggle under any burdens put on it without a murmur, and do its best as the soldier who is over-marched, over-fought, and under-clothed and under-fed, but unless it is an absolute unavoidable necessity, it would be the height of folly to increase the burden one iota more than is absolutely necessary. It is one of the dangers that face our legislators in Washington.

We are going into this suffering and distress as much for the sake of those

to follow us in the future as for ourselves. The burden should be distributed into the future as well as over the present. If our fight is to save the world and the future of democracy, liberty and justice, as we are convinced it is, then we should not be asked to do all the fighting and all the paying also. The former, of course, goes without saying, a share of the latter will be gratefully assumed by our children. Our argument is not to make too heavy drafts on capital, business and industry. America must continue strong and prosperous if we are to win this war.

There is a grave danger of our business being regulated into something like impotence by uncertaining, over-regulations of our wealth, business being taxed into discouragement. We have an extraordinary asset in our credit and ability to borrow from our own people. It should be used to the limit rather than the policy of pay as you go, which is quite impossible in war. We will hear no complaint from capital or wealth in these times, no matter

what they are called to pay. What we will see if it is overdone, is the slowing down of enterprise, business confidence and the wheels of industry, and when that takes place, it will be a difficult thing to start it up again. We trust our statesmen will remember this.

But even looking at it from a higher point of view, it is a nation's war, for the defense of something in which no member of the nation has a greater share than the other. It is not for the defense of business or of the rich, but of every member of the nation, therefore why should not every man who does not physically fight, not be asked to do his bit proportionately to his means and power? If we imagine the business interests and 10% of the people are to pay the expenses of the war, and the other 90% are to be untouched, and many of them by reason of the war obtain higher wages and greater personal comforts, then we can make up our mind at once that commercial and industrial disaster is certain, and with it an enormous curtailment of our present powers in the contest.

Business Trends.

Decrease in Iron Production

That pig iron output fell off further in July was chiefly due to coke shortage, with heat and humidity added. The decrease from June was 1,200 tons a day, which was also the June decline from May. The July total was 3,342,438 tons, or 107,820 tons a day, against 3,270,055 tons in June, or 109,002 tons a day. Furnaces blowing out balanced those going in, so that 351 were active August 1st, as on July 1st with estimated capacity of 109,248 tons a day, compared with 111,755 tons a day one month previous.

The figures for the daily average production, beginning January, 1914, are as follows (in tons of 2,240 pounds):

	1914.	1915.	1916.	1917.
Jan.	60,808	51,659	102,746	101,643
Feb.	67,453	59,813	106,456	94,473
Mar.	75,738	66,575	107,667	104,863
April	75,665	70,550	107,592	111,165
May	67,506	73,015	108,422	110,238
June	63,916	79,361	107,053	109,002
July	63,150	82,691	104,017	107,820
Aug.	64,363	89,666	103,346	.....
Sept.	62,753	95,085	106,745	.....
Oct.	57,361	100,822	113,189	.....
Nov.	50,611	101,244	110,394	.....
Dec.	48,896	103,333	102,537	.....

Prices of Commodities Still Soaring

While the public at large hopes for lower prices, the actual trends respond by rising to new high levels. This statement, of course, applies to the movements taken in the aggregate, for in some respects the situation has eased, soil products being more readily got at lower prices, and at the same time the market for edible animals has manifested some disposition to give ground without, however, operating to reduce the cost of cut-up articles. The results of widespread gardening, good cereal crop prospects, some restriction of consumption, and finally the influence of possible governmental control of prices for certain commodities are all calculated to bring about more fav-

orable conditions for the ultimate consumer. We have here one side of the picture; but when we turn to raw cotton or raw wool, manufactured textiles, metals, building materials, chemicals and drugs and coal and coke, nothing but strength is visible. Indeed, most of these groups were never at higher levels, and here the effects of War's wants, insufficient supplies of cars or high wages with restricted supplies of labor are clearly discernible. Therefore the ebb makes for lower quotations for foodstuffs, while the flow runs strongly in the direction of unparalleled prices for manufactured commodities.

The outstanding fact is that "Bradstreet's" index number of commodity prices for July 1st works out at \$16.068, a new high level and one that shows an increase of 3.8% over June 1st. This upward sweep practically coincides with that witnessed in England in the like period. "Bradstreet's" number reflects the eleventh consecutive advance noted within as many months, while also exhibiting a rise of 39.4% over July 1, 1916, of approximately 63% over that date in 1915, and of 85.6% over July 1, 1914, just prior to the outbreak of the war in Europe.

Failures at Summer Minimum

Failures in July were down to about the low summer minimum as gauged by recent years' returns, and, except for a very slight increase shown over June, the monthly total for July is the smallest recorded in any month since June, 1913.

There were 1,050 failures in July as against 1,041 in June, and the decrease from July a year ago is 9%, while there were 27% fewer failures than in July, 1915. Liabilities totaled \$17,089,053, an increase of 69% over July a year ago, but considerably below those of July, 1914 and 1913. For eight months the failures number 8,207, a decrease of 19% from 1916, while liabilities of \$102,326,982 show a decrease of nearly 3% from last year.

Business Trends.

New High Records in Foreign Trade

There is something impressive, with a significance that cannot be strictly judged at present, in the statistics of foreign trade for the fiscal year ending with June. The total value of our exports and imports for the fiscal year just before the war was \$4,259,000,000. The first part of that which followed was a period of great disturbance and uncertainty, and the increase for the year ending June, 1915, was only to \$4,443,000,000. In the following year came a great demand for our natural products and for such industrial products as we could supply for the support and equipment of armies. The result was a trade amounting to \$6,531,000,000; but the production of munitions and other strictly war supplies was hardly in full swing, and in this last year the total of all the trade rose to \$8,900,000,000.

Naturally the gain has been mainly in exports, for our demand for imported goods and materials did not greatly increase during this three-year period, except in certain lines contributory to the production of articles for export. In judging of the figures some allowance must be made for advanced prices, which varied a good deal with different articles according to the relation of demand and supply. Taking imports separately we find them valued at \$2,634,000,000 in the last fiscal year, compared with \$1,894,000,000 in that preceding the war, a gain of 40% in market value. In exports there is a striking difference, their value for the fiscal year just passed was \$6,280,000,000 and in that preceding the war \$2,365,000,000, an advance of \$3,915,000,000.

	1917.	1916.
June		
Exports	\$516,000,000	\$464,685,956
Imports	307,000,000	245,795,438
Excess of exports	\$269,000,000	\$218,890,518

Twelve months ended June 30th.

	1917.	1916.
Exports	\$6,294,000,000	\$4,333,698,604
Imports	2,659,000,000	2,197,984,842
Ex. of exports	\$3,635,000,000	\$2,135,713,762

Summary of trade since the war began:

	Exports.	Imports.
35 months		
Merchandise	\$13,302,742,281	\$6,372,096,205
Gold	494,725,197	1,639,362,367
Silver	176,095,921	94,792,701
Total	\$13,903,563,699	\$8,106,251,273

Many New Enterprises in July

Seldom has so much activity been witnessed in the formation of new enterprises as during July, when incorporations in the Eastern States with a capital of \$1,000,000 or over represented \$416,350,000. This is an increase of \$198,687,500 over July a year ago, and \$345,250,000 as compared with two years ago.

The grand total of all companies chartered with \$100,000 or over, covering all States, amounted to \$492,965,800, comparing with \$320,057,500 in July a year ago, and \$137,675,000 two years ago. The overshadowing feature of the returns is the fact that practically all lines of business are represented, thereby emphasizing the great prosperity of the country. Without question, the Government's huge demands for war supplies were responsible in no small part for the incorporation of a number of companies.

Following are the comparative figures as specially compiled by The Journal of Commerce and Commercial Bulletin of companies incorporated in the Eastern States during the last three years, with an authorized capital of \$1,000,000 or more.

	1917.	1916.	1915.
Jan.	\$244,450,000	\$270,995,000	\$51,150,000
Feb.	283,815,000	365,995,300	53,950,000
Mar.	281,000,000	194,750,000	70,050,000
April	361,510,000	166,650,000	32,200,000
May	388,481,000	209,735,000	78,950,000
June	352,584,000	264,350,000	181,247,100
July	416,350,000	217,662,500	71,100,000
Total	\$2,328,190,000	1,590,047,500	538,647,100
Aug.		113,472,000	67,100,000
Sept.		164,700,000	286,625,000
Oct.		303,768,700	208,695,000
Nov.		260,407,800	190,075,000
Dec.		280,850,000	135,125,000

Steel Requirements During War

Even those who have the greatest vision failed to grasp fully the magnitude of the task we undertook when we entered into war or the length of time it would probably take to complete the work. It behooves us therefore to take stock at intervals in the light of the new information that becomes available.

Some whose judgment should be good think that the war will last several years still. The Administration is preparing for several years. Col. Roosevelt, who is not a part of the administration, declares that it will be next summer before we begin to see our way through the work necessary to end the war.

It goes without saying that if we are to wage war for several years, with millions more likely than hundreds of thousands of men at the front, we must devote all our resources at home, of material and man power, towards waging it vigorously, and that it will be criminal for any individual to set his ideal of what service he can render, at less than the maximum service of which he is capable.

Our record to date has been one of unpreparedness, of seeing everything much later than we should have seen it. Are we to continue to be thus sluggish, comforting ourselves with the reflection that the things we did not see soon enough we now see clearly? Day by day there will be new things that we should see promptly, and there is a real danger that the whole history will be one of always seeing things later than we should have seen them.

In our steel industry we have been slow. By this time we could have many more slabbing and wide plate mills than we have. Only by denying the wants of many deserving private consumers can we provide the plates needed for steel freighters, and plates for freight cars, very desirable, are almost entirely left out of the reckoning. Many plate mills are being built now, but it is at least a year later than it should have been.

With a long and trying war before us, we are now considering details of

the steel market, how soon there will be a readjustment in prices, so that the "ordinary consumers" can continue to do business, whether the Government will "intervene" and so on, a consideration of relatively petty chances. We confess to having printed much of this sort of thing in the American Metal Market, and doubtless we shall print much more, but let us all strive as best we may to attain a broader vision.

The prosecution of the war presents the greatest complexities. It is a man's job to consider and think out the smallest details of any of the multifarious things we shall find it necessary to do. President Bedford of the Standard Oil Company urges that the use of passenger automobiles be confined to actual needs, mere pleasure riding being abandoned, for we are using and exporting more gasoline than we can produce. Also, he urges that there be more drilling for oil, even though the yield in oil be much less than the drillers usually counts upon.

What does this mean, carried out? Certainly it means less steel consumed in the manufacture of pleasure automobiles. Likewise it means more steel consumed in oil development, rigs, piping, tanks. The decrease in the one tonnage may be less than the increase in the other, but we have learned nothing at all if we think of war steel in terms of mere tons of steel. The industry is highly specialized. Tons of ingots are nothing. It is tons of this finished product or that. Bars cannot be used as plates. Structural shapes will not do for pipe. Rails cannot be substituted for tin plate as food containers. Sheet piling will not make shrapnel shells.

President Bedford's advice refers to only one item among dozens that will be found involved in prosecuting the war with the sum total of our resources. One cannot deny that it would have been much better if we had done a great deal more in the past six months than we have done, both in action and in laying plans and in determining what we should have occasion to do in

future. If we are to-day behindhand in our thoughts and plans, as a nation, certainly there will be many more things developed in future for us to do, and the steel industry will be no exception. Less pleasure riding and more oil drilling is but one thing in many. Let us try to forecast the future of the

steel industry as we can, of course, even as to prices that may likely rule, but let us in all our thoughts leave the largest room for new ideas, new trends, new duties. We can now see but very dimly the part steel is to play in bending all our resources to the prosecution of the war.

How Long Will Steel Orders Last?

Now that the steel industry has settled down to clearing its order books in preparation for taking a new start there is speculation as to how long the business on books would last. Of course the readjustment, with a fresh buying movement, is expected to occur well before all the business is worked off.

The Steel Corporation's unfilled obligations at the end of June amounted to 11,383,287 tons, which is equal to the output at the rate of the past few months for about nine months. This total includes orders for all the rails the Corporation cared to sell for next year's delivery as well as a considerable rail tonnage for 1919. It also includes ship plates sold for 1918 and a little tonnage for 1919. In several other lines the orders extend far beyond nine months, so that obligations in some lines amount to much less than nine months of output.

The large independents are understood, in general, to be booked up a less distance than the Steel Corporation for the sales policy has been different with different companies. Thus Lackawanna reported 913,196 tons of unfilled business for July 1st, while Republic reported 528,976 tons. The Republic tonnage presumably includes southern pig iron, for which there was an excellent demand for the second half of this year, with some demand for the first half of next. As the steel outputs of the two companies are not greatly different it is evident that Lackawanna is sold much farther ahead than Republic. Cambria occupies a po-

sition of its own among the large independents, for several years ago it adopted the small mill policy, of not booking far ahead, but of meeting the market from time to time. The smaller mills are in general not filled nearly as far ahead as the large mills.

While specific and accurate information is not available, a rough summary may be made of the different steel products, as follows.

Rails.—Sold up through next year and into 1919, but by no means to the extent of the full rail rolling capacity, for most of the rail mills devote a portion of their capacity to billets, and some to sheet bars also, while they also have rolled rounds for 3 to 3½-inch shrapnel. There was heavy production of this material the latter part of 1915 and through 1916, with much less this year, but considerable rolling space is doubtless reserved against orders to be placed by the Government now that we are in the war.

Plates.—Many large mills are sold up for more than a year. Some of the smaller mills are sold up for only a few months, they being the ones that have been able to obtain fancy prices. Some mills have sold relatively little tonnage above 3.75c and scarcely any above 4.50c. It was on the morning of March 8th that the Carnegie Steel Company announced its advance in plates from 3.75c to 4.50c. There is new plate mill construction to produce 75,000 to 100,000 tons of plates a month, to come in at various times chiefly within the next six months, and so far as definitely known there has been very little

selling against such new capacity.

Shapes.—There is relatively little tonnage on books. The reports of the Bridge Builders' and Structural Society show fabricated steel bookings in the first six months of this year averaging less than 59% of the fitting capacity. April being the highest with 68% and June the lowest with 47½%. Considerable tonnage is going on books for the Emergency Fleet Corporation's freighters.

Bars.—There was a little contract business done for the first half of 1918 with agricultural implement makers, reported to be on the basis that specifications would have to be filed before January 1st. Jobbers have little tonnage under contract, in general less than three months' supplies.

Sheets.—In April the American Sheet & Tin Plate Company sold its remaining sheet tonnage for the year, estimated at less than six months' output because it would require some time after July 1st to complete first half contracts because steel was being diverted to the tin plate mills for conserving the food supplies. The independents took relatively little business for the whole half year, a favorite course being to sell only three months ahead. A fair guess would be that half the output is sold up for six months and the other half for an average of three months.

Tin Plate.—Mills seem to have com-

pleted their first half contracts on time. The second half output is very nearly all sold. There has been no disposition to sell anything for first half 1918.

Wire.—The usual practice of the wire mills is to sell rods and plain wire to large manufacturing consumers for six months at a time and jobbers in nails, wire, etc., for 60 days. Recently the rule has probably been stretched somewhat.

Tubular Goods.—Seamless tubing is sold up for a very long time ahead. Welded boiler tubes are sold up, by most mills, for a long time ahead. Oil country goods and standard steel pipe are usually not sold far ahead, but there has been such pressure to buy that the business on books is probably equal to about four months' output. It is possible to buy pipe for much earlier delivery than that by paying the 42¢ list, which is about \$25 a ton above the official list of the leading interest, in which Republic keeps it company.

With a continuance of such complete stagnation as has existed in the past fortnight it might not require more than three or four months for some of the mills to get in such shape as to be desirous of booking more business. As to a new buying movement, much would depend upon the temper of buyers, how nearly they would allow the mills to clear their order books before they endeavored to buy. The present attitude is one of letting the market serve itself alone.

What is a Fair Price for Coke?

When a Government order for steel is given to an integrated concern, it telescopes its profits as much as necessary. If an order is given to a steel producer not integrated, one which buys its pig iron, a special price must be made on the pig iron required. If the blast furnace has no coke works a special price must be made for its coke. If steel prices not only for the Government, but for all buyers, are regulated, then there must likewise be regulation of prices of the pig iron and coke involved. It is merely a detail that in the one instance the coke works, blast furnace and steel mill are under one ownership and in the other instance they are owned by different interests.

The truth is particularly elusive when an effort is made to determine what is a fair price for coke. The history of the trade shows that the law of supply and demand is an especially poor one to furnish the coke producer a fair profit at all times. There is a heavy investment in the coal in the ground still to be taken out. When the price of coke is low it does not seem as if the coal would likely be worth much in the future and the operator has not courage enough to hold out for a fair price. When business is good the price of coke is very high.

This tendency towards wide fluctuations is well recognized in the trade, a tendency for coke to fluctuate more widely than pig iron. It used to be a favorite practice to make "ratio" contracts for coke, and these contracts recognized the fact just mentioned. When both pig iron and coke were low-priced a ratio of 1:7 was regarded fair, but with higher-priced materials a ratio of 1:6 was considered proper. There were even contracts made wherein the ratio was to vary, during the life of the contract, according to the price of pig iron.

History, of course, records no cases of coke prices commensurate with \$25 pig iron, and naturally when pig iron recently reached \$50 the coke operator was disposed to extrapolate and think of ratios of 1:4 or even 1:3 when there

probably never was a contract made at stronger than 1:5½.

The ratio, however, is not the only thing. The by-product coking industry has been growing very rapidly, the circumstances being that by-product coke is commonly not sold, but is produced by the consumer, and that as a rule the by-product ovens are not predicated upon the holding of a large acreage of coal, because one can readily buy coal for by-product coking. Accordingly the merchant beehive operator was passing out. It was the expectation, late in 1915, that there would be such a surplus of coke-making capacity by the middle of 1916 that thereafter coke would sell at no more than the coal value, plus the cost of conversion. Money talks, and the actual market bore testimony to the expectation, for coke sold at a lower price for the whole of 1916 than for the first half, sales for each delivery being made at the same time.

The scarcity of coke that has sent prices so high has been due to no scarcity of coke-making capacity, for there has been much more than enough, nor is it fair to attribute it to the high price of coal, because both coal and coke became high on account of car scarcity and in such circumstances the coke plant could not secure a car rating for coal and thus ship coal. It had coal but could ship it only as coke.

By one analysis, therefore, the coke works would be entitled only to cost plus a small percentage of profit if one is endeavoring to arrive at a price structure with war or adventitious influences eliminated. The ability of the buyer to pay would not be an argument because if everything is to be pared the proper thing would be to decrease the price of pig iron and thus reduce the ability of the furnace to pay.

An arrangement that would deprive the coke operator of profits, simply on the theory that if times had remained normal his profit would be gone by this time, cannot be considered for a moment. It would seem fair, however,

to give the coke operator such a division of the price of pig iron as has obtained in the past. In the table below there is given the Connellsville Courier's annual estimate of what Connellsville coke would have brought each year if all the product had passed through the market, i.e. if the integrated companies had charged their blast furnaces the price paid by furnaces which bought their coke. The figures are a shade high for furnace coke, because they include foundry coke, but that is a small divergence. Next there is given the average market price of basic pig iron at valley furnaces. This is probably somewhat above the realized average, because while there was more pig iron produced when prices were high than when they were low, the buyers undoubtedly were able to beat the market average by a considerable margin. The ratio for each year is then figured, i.e., a net ton of coke at ovens compared with a gross ton of pig iron at furnace.

	Coke.	Pig iron.	Ratio.
1909	\$2.00	\$16.76	1:8.28
1910	2.10	16.26	1:7.75
1911	1.72	14.84	1:8.63
1912	1.92	15.04	1:7.83

	Coke.	Pig iron.	Ratio.
1913	2.95	16.26	1:5.51
1914	2.00	13.99	1:7.00
1915	1.80	14.90	1:8.29
1916	2.58	23.05	1:8.94

The average of the eight ratios is 1:7.78. That is considerably lower for coke than the ratios that used to be used in contracts, but that is quite proper because the contracts were requirement contracts and often the furnace would not run when prices were low, and the coke operator was entitled to a better ratio to offset this option given the furnace.

Supposing that prices realized for pig iron were considerably less than the average quoted market, a ratio of 1:6 would still, apparently, be quite a fair one for the operator. If, for instance, basic pig iron were \$30, valley, Connellsville coke would be \$5 at ovens. Pittsburgh district coal is set at \$3.00 per net ton. Connellsville coal at the same price would be \$4.50 for the coal, and 50 cents would not be nearly enough for the conversion, but Pittsburgh coal at \$3.00 is very profitable and the Connellsville coke operators could not get cars to ship their coal.

Simple Economic Truths.

Some very absurd ideas are being preached these days. Excess profits are being urged as necessary, for the particular purpose that the Government may tax them, and "prosperity" is often spoken of as synonymous with high prices. There is no real economic doctrine in any such talk.

Real prosperity is a very simple thing. It is made up of two elements, heavy production through hard work and efficiency, and avoidance of waste. We must produce and we must use what is produced to the best advantage. Taking the nation as a whole there is no particular advantage, per se, in either high prices or low prices. High prices are advantageous to the seller and correspondingly disadvantageous to the buyer, while with low prices these conditions are merely reversed. Foreign trade, of course, must be counted out

of this reckoning, but it is never a large percentage of our total business activity and for the duration of the war it will count still less than usual because what we export will be chiefly to help the conduct of the war.

Apart from foreign trade, then, what we produce and what we consume are equal and we sell as much as we buy. How can it be an advantage that all prices should be high or all prices low?

What is essential is maximum productive activity and the avoidance of waste. There are various essentials to this end, a few of which may be mentioned:

(1) The price of any individual commodity in the broad sense should be in relation to other things. The general average of things, goods, transportation, wages, rents, etc., may be high or low, it does not matter. The differ-

ent things should be in relation to each other. If rents are high wages should be high. If rails, cars, locomotives, fuel, are high then railroad rates should be high. If regulation is needed, and in time of war the Government may have to regulate many things, the regulation should not be directed towards pulling everything down or everything up, but towards pulling down the things that are relatively too high and pulling up the things that are relatively too low.

2) If activity in an industry is hampered by a physical cause that can be removed with a relatively slight effort, that cause should be removed. For instance, the hauling of Connellsville coke to furnaces involves a freight charge of 90 cents to \$2.65, quite profitable to the railroads, so evidently the work is not excessive, but the coke movement has been insufficient. A ton of coke not moved may mean failure to produce steel for which a buyer is anxious to pay \$100. It would be economy to find means whereby the railroad could perform this extra service, no big thing when there is a profit in it at from 90 cents to \$2.65, so that \$100 worth of business would result.

3) An unlimited number of wastes are to be avoided, waste of space in freight cars when there are not enough cars to handle all the business offered, waste of food, waste of labor by men engaged in unnecessary occupations. The list is without limit when it comes to wastes.

(4) The individual worker must do his best. The trade unionist who endeavors to reduce his hours of labor from eight to seven is merely trying to get the best of the rest of the country to his own advantage. If he does less work in the seven hours the net result is a loss to the country, a reduction in the prosperity. The workman who endeavors to get more money for the same amount of work may be doing the country good or ill. If the higher wages do not hamper the employer, and if they are spent advantageously, there may be a net benefit. If the workman spends the increase in wages in drink, if he wastes it in food, if he discards his clothing when less worn out than formerly, his wage increase has done the country an economic harm; it has re-

duced the sum total of prosperity. If, finding jobs plentiful, the worker refuses to do as good work as formerly he reduces the country's prosperity.

There are various other essentials to maximum production and the avoidance of waste, in other words to national prosperity. Of those mentioned there are few employers who will not lay the greatest stress upon the last, the matter of labor.

There is universal complaint, in fact, about labor. We are in no position to make a survey, or to weigh the complaints as to inefficient service against the total services that are being rendered by labor. Everyone knows, however, that the general principle that controls the labor situation is thoroughly vicious. When times are bad and there are more men than jobs the individual workman, and workmen in general, have the worst of it. The individual, to hold his job, does more than his normal amount of work and helps to keep another workman out of employment. When times are good and labor is scarce the individual performance of the workman decreases and more men are required to do a certain piece of work than the normal, just at the time when more men are not available.

It has been explained to us repeatedly that the worker at home is as important as the soldier in the field. It would be considered a national calamity if the soldier in the field should refuse to fight as hard as a soldier usually does fight. Summary punishment, indeed, is provided against such a contingency.

Upon the activity at home depends in large measure the safety, the restriction in the loss of life, of the army in the field. It would be equally a national calamity if the men at home did not do their best. It is the duty of the national Government to exact from the men at home as much service as from the men in the field. Their work is needed to support our Army and Navy and to preserve prosperity. If there is any doubt—and indeed if there is no doubt there is certainty—the Government should make a thorough survey as to the performance of labor and see that labor is keyed up to its maximum efficiency.

Storage During the War.

By Waddill Catchings, Chairman, Commission on Co-operation with the Council of National Defense).

Even to-day, few men realize that there is a storage problem in connection with the war, but those who have come in contact with the Storage Committee of the Council of National Defense know that this is a real problem and one which directly or indirectly will affect every business man.

Handling Materials.

The problem arises from two main conditions.—first, the enormous purchases which the Government is making and, second, the heavy demands upon the railroads for transportation service. The former will result in great accumulation of materials during the process of manufacture and in the assembling of vast quantities of finished product prior to use here or shipment to France, and the latter is going to interfere with the transportation service given to general business, producing from time to time much accumulation of raw materials and finished products in all lines of business.

The Storage Committee has been at work for many weeks in connection with the first phase of the problem and has been of far-reaching assistance to the War and Navy Departments not merely in making clear the nature and extent of the problem and the measures which must be taken to meet it, but in effectively co-operating in putting these measures into effect.

Depot Board.

There are five branches of the Army which are actively interested in the storage problem.—the Ordnance Department, the Signal Corps, including Aviation, the Medical Corps, the Engineering Corps, and the Quartermaster's Department, and the Secretary of War has appointed a board composed of a representative of each of the above departments and two members of the Storage Committee of the Council of National Defense. This is known as the Depot Board and is assisting in co-ordinating the work of the five departments in meeting the storage problem.

Three principal considerations have been in mind.—first, to develop storage facilities at points of production to avoid congestion in manufacture; second, to develop storage facilities for finished goods near the point of consumption or of shipment abroad in order to minimize the need for railroad cars; and, third, in general to create conditions under which railroad cars will not be used for storage purposes.

Facilities at Production Points.

Large storage facilities at points of production are necessary, because an even flow of raw materials, supplies, and finished product cannot be anticipated when the present enormous emergency work is being done and when business conditions generally are upset by the extraordinary conditions prevailing during the war. All producers and manufacturers are therefore urged to create additional storage facilities. Unusual measures must be taken to meet unusual conditions.

Facilities at Destination.

In addition, storage facilities near the point of consumption or of shipment abroad are needed so that goods may be shipped only once. Every economy must be practised in the use of transportation facilities and the Government must see to it that in connection with Government purchases no avoidable demands are made upon railroads, overburdened as they are by a load beyond their utmost capacity. If the Government were to ship to one warehouse and later ship the same goods to another warehouse, or ship goods back and forth from warehouses to points of consumption or foreign shipment, railroad equipment would be used unnecessarily.

Release of Freight Cars.

The third point is that unless adequate preparations are made to store materials or goods on the arrival of railroad cars, these railroad cars themselves must of necessity be used to store materials and goods. This is par-

ticularly true regarding goods for foreign shipment. Ocean transportation at the best is irregular and to-day the conditions are uncertain, to say the least. Often in the past two years shipments for France and England have accumulated at New York and other ports that many hundreds of cars for months have not only blocked terminal facilities but side tracks all the way to Buffalo and Pittsburgh. The work of the Storage Committee is directed toward avoiding this condition on the enormous shipments to be made by our own Government.

Packages for Shipments.

Other activities of the Storage Committee in connection with the Government situation have related to the baling of products for shipment, developing motor-truck haulage for short distances, placing experienced warehousemen at the disposal of Government bureaus and departments, and through committees of experts studying terminal and port facilities.

Regarding the first point it may be said that baling or compressing products for shipment is developing great possibilities for saving transportation space. Already socks and blankets are being baled and satisfactory progress is being made toward baling uniforms, shoes, and even prunes. Bales are covered with a water-proof material which is later used for sand bags at the front. One collateral advantage of baling is that use can be made of flat cars in shipping merchandise.

Motor-Truck Transportation.

Again, the use of motor trucks for short haul is necessary to release freight cars for long haul. Railroad cars frequently been used in cities to transport goods only a few blocks. In Europe to-day motor trucks are used in many places for all haulage under 40 miles. Now that our demand upon the railroads is so great, no time is to be lost in making use of the opportunities presented by motor trucks for short haul.

Transportation Experts.

Furthermore, the Storage Committee has called upon large shippers and warehousemen in all parts of the country for men of experience in handling transportation and warehouse prob-

lems and has recommended hundreds of such men to the Government for service in the departments. Many men who a few weeks ago were drawing salaries of ten, fifteen, and twenty thousand dollars a year in important commercial positions are now working for the Government at the modest pay of men in charge of Government warehouses or the receipt or handling of freight for our armies. Such men are already in France. Other efforts of the Storage Committee have resulted in special courses training men for work in handling stores. Such courses are now being given at the Universities of Harvard, Pennsylvania, Michigan, Wisconsin, Dartmouth, Chicago, Northwestern, Georgia, Washington, Columbia and Illinois. Nearly one thousand men who are now attending, or who have attended, these courses have enlisted in the Government service for the period of the war.

Port Facilities.

An activity of the Storage Committee which can only be referred to is the work of the Committee on Terminal Port Facilities. This Committee has made extensive investigations and its report is now the basis of action by the Depot Board, above referred to.

Several Advantages.

What has been said above relates to the storage problem of the Government, but business men will no doubt see much in what the Government is doing which will suggest similar action upon their part in connection with their own business. In fact, the Storage Committee believes that what has been done for the Government can be made of general help to business men. Every business man is interested in the effective meeting of the storage problem, even if he has no storage problem of his own, because the storage problem is a part of the greater transportation problem which affects all business.

Railroads' Task.

The railroads are doing more than ever before but the burden is overwhelming, for business in this country to-day is on a scale never before approached. On the one hand, the supply of new equipment is restricted by

material and labor conditions and, on the other hand, not only is existing equipment being given to our Allies, but the output of many of our car and locomotive plants is given to them because their need is greater than ours. Therefore with little opportunity of securing new equipment and having to rely upon what they have, using this to the utmost until it wears out, the railroads are called upon for increasingly great efforts as our business everywhere expands.

Co-operation in Traffic Conditions.

The utmost which the railroads are able to do is not equal to the needs of the Government and of the great business being done to-day. In fact, the facilities of transportation are very likely to be the limiting factor on general business, unless there is close co-operation between business men and the railroads. Business men will see, therefore, how deep is their concern that no avoidable demand be made upon the railroads either for transportation or for the use of railroad cars for storage purposes.

Special Request to Organizations.

The request is therefore made of all member associations interested in this problem to appoint competent and energetic committees to act in this connection, and to send the names of the members of such committees to the undersigned committee and to the Storage Committee of the Council of National Defense, Munsey Building, Washington.

Activities for These Committees.

There is much for such committees to do. They can promote discussion among business men and bring about an early understanding that there is a storage problem; they can show what this problem involves. Among other things, reports should be made to the

Storage Committee of all onerous and avoidable conditions regarding packing and storage in connection with both Government and private contracts. Suggestions should also be made regarding baling and compressed or bulk packing in any industries within the view of such committees.

Local Storage Facilities.

Efforts should be made to develop local storage facilities to meet the extraordinary requirements of war time business. Furthermore, steps should be taken to eliminate less-than-car-load shipments by combining such shipments for many manufacturers in a locality and by establishing centers for distributing by truck shipments received in car lots, and for receiving goods in a similar manner for outbound movement in car lots. Effort should also be made to bring about the loading of railroad cars to full car capacity. Where such loading is prevented by trade customs, which establish the unit of an order at less than maximum car capacity, steps should be taken to change these customs so that the use of cars will not be unduly restricted. These are suggestions only. Committees themselves will doubtless initiate things to be done.

In general the Storage Committee wants business men to understand that, in the extraordinary conditions which in times such as these must prevail, we must make every effort not to hinder the railroads in the great work they are doing. Movement of freight must be in such manner as to facilitate railroad transportation and this can only be done fully by preparing in time for the storage problem.

Food Storage.

In this bulletin there has not been considered the great problem of storing food products. This may be the subject of a later bulletin.

U. S. Takes First Rank as Producer of Silver.

Output Is 42% of World Yield.

The recent changes in the world's demand for silver and consequent advance in prices are of special interest to the United States, which is now the world's largest producer of silver. Prior to 1914 our neighbor, Mexico, produced more silver than did the United States, but at present our production of the white metal is double that of Mexico, and much greater than that of any other country.

A compilation by the National City Bank of New York shows that the silver production of the United States is now double that of Mexico and three times that of Canada, which holds third rank among the silver-producing countries of the world. Of the 172,383,000 ounces of silver produced in the world in 1916 the United States produced 72,833,000 ounces, or 42% of the world's total, while 20 years ago, in 1896, we produced but 37% of the world production which in that year was 157,061,000 ounces. In that 20-year period, 1896 to 1916, the production of the United States has increased about 14,000,000 ounces, while that of other parts of the world has increased but about 1,000,000 ounces.

The world's chief producers of silver are the United States, Mexico, Canada, Peru, Japan, Spain, Australia and Chile, in the order named, the United States having produced in 1915, for which figures of all countries are available, 74,961,000 ounces, Mexico, 39,570,000, Canada 28,401,000, Peru 9,420,000, Japan 5,080,000, Spain 4,565,000, Australia 3,327,000; world total 172,374,000. In 1916, for which returns are not yet available for many of the smaller countries, the production of the United States was 72,884,000 ounces, Mexico 35,000,000, Canada 25,500,000, and the world's total 172,384,000 ounces.

In the distribution of our surplus silver a very large proportion goes to

Europe, the remainder chiefly to the Orient. In the fiscal year 1916 the latest for which complete figures are now available, we exported \$53,172,000 worth of silver, of which \$41,032,000 went to England, \$8,240,000 to China and Hongkong, and \$1,385,000 for South America. We also exported in that year \$6,420,000 worth of foreign silver, out of a total of \$34,154,000 worth sent to us chiefly from our near neighbors, Mexico, South America, and Canada, part of it coming in the form of ore and a part as refined bullion. Most of this is sent to us because of our superior smelting and refining facilities, and also because the United States as the world's largest producer of silver has special facilities for marketing that product in other parts of the world. In the fiscal year 1917, for which 11 months' figures are now available, the value of silver exported was about \$75,000,000, slightly exceeding in value that of any earlier year. The exports of 1917 are thus about \$25,000,000 in excess of 1916, about one-half of the increase having gone to Europe and the remainder to the Orient.

World-production of silver has materially declined since the beginning of the war. The total output in 1913, the year immediately preceding the war, was 223,900,000 ounces, but dropped to 160,626,000 in 1914, 179,574,000 in 1915, and 172,384,000 in 1916, the decline occurring in countries other than the United States, our own production having been, in 1913, 66,802,000 ounces; in 1914, 72,455,000; in 1915, 74,961,000, and in 1916, 72,884,000 ounces.

Nearly one-half of the world's production of silver prior to the war used in the arts and industries, the Director of the Mint having estimated the consumption for arts and industries in 1912 at 97,000,000 ounces, out of a total production in that year of 224,000,000

ounces. At present, according to current reports, the countries at war are increasing materially their coinage of silver, partly to take the place of gold being withdrawn from circulation for other purposes, and in part to accompany the issues of non-metallic currency which have been made necessary by

the demands of the war. Meantime, however, the demands of the Orient are also apparently increasing, since our own exports of silver to the Orient in the fiscal year 1917 will probably aggregate \$16,000,000, against approximately \$9,000,000 in 1916 and \$6,000,000 in 1915.

Constantly Changing Demand For Steel

The past two years have witnessed much realignment in the distribution of steel demand, generally by way of a given product becoming scarcer than formerly rather than by any product becoming more plentiful than formerly. With the peculiar requirements of the war, running much more strongly towards some products than others, still greater changes may occur. Hitherto there has been chiefly a scarcity of steel in general, only a few products, particularly plates, being especially scarce. The steel industry is highly specialized in its rolling departments. Ordinarily there is a considerable excess, say 10 to 20%, in the steel rolling capacity over the steel-making capacity, and there is a limited amount of flexibility in the departments, whereby a given set of rolls can modify its product to an extent. With the great increases in steel-making capacity of late, with less increase in steel rolling capacity, the flexibility of the industry as a whole is somewhat reduced.

For instance, while over a period of years shapes, plates and bars stood in the order of price as named, shapes being slightly the highest, on an average, the three products started 1915 at the same level. In July bars were by a slight margin the strongest of the three, perhaps by reason of orders for small rounds, which afterwards were largely diverted to rail mills. In October, 1915, shapes were a shade the strongest, bars coming next with plates the weakest. Early in 1916 plates began to forge far ahead of the other two products. From commercial conditions rods became disproportionately

high as compared with wire and nails, as rods were sold for the highest price they would bring while moderation was exercised in sales of wire and nails to regular customers.

Now, at the outset of our war preparations, for little has really been actually accomplished thus far, there are prospects of very great disarrangements in the distribution of demand among the different products. Plates, of course, are in excessive demand and will be so for years. As to structural shapes, the reports of the Bridge Builders' and Structural Society have shown bookings during the first half of this year averaging less than 59% of the fabricating capacity, and being only 47½% for June. Prospects are that structural work of ordinary character will be still less in future, but the ship-building program will for an indefinite time call for a large tonnage of structural shapes for building ships. Apart from this it will call, for a relatively short time, for a large tonnage for creating shipyards, and that particular demand will eventually disappear.

If the advice of President Bedford, of the Standard Oil Company, relative to supplies of gasoline, is followed, there will be less steel used in automobile building and more steel used in oil development.

High costs of erection and labor scarcity are, from one viewpoint, to reduce building operations greatly, but labor to work in mines and factories is very scarce also, and has become particularly about its housing accommodations. As a result one hears of one project after another for the erection of

large blocks of houses to afford better accommodations to employes. It is expensive, but the labor must be attracted. Thus in the matter of building there is a pull both ways.

There are many such cross currents, and more are going to develop from time to time as we get farther into the prosecution of war. It is no longer a case of whether steel, as steel, is to be scarce, or how scarce. It is a matter of each finished product by itself, and

buyers of various products have occasion to exercise the greatest circumspection in making their plans for future operations as well as in making purchases. Wide inconsistencies in the relative prices of different commodities may be avoided by wise counsel, but divergencies in the quantities available in proportion to demand cannot be regulated, the rolling facilities not being sufficiently flexible.

Topical Talks on Iron.

LII.—Steel Railroad Ties.

Ten years ago there were distinct prospects that eventually, and in the not very distant future, steel ties would come into general use on the railroads. The Bessemer & Lake Erie, controlled by the Carnegie Steel Company, was laying steel ties as rapidly as wooden ties gave out, and had about 90 miles of track so laid already. The cost at that time was too high for general adoption, but it was expected that the cost would come down somewhat, while the cost of wooden ties was expected to increase steadily.

The Pennsylvania and some other lines experimented with steel ties. A single accident on the Pennsylvania, at Mineral Point, proved quite injurious to the cause of the steel tie, as whether or not the derailment was due to the use of steel ties, the rail was ripped from the ties for a long distance and the engineers claimed that this would certainly not have been the case with wooden ties. In general they insisted that the steel ties made too rigid a roadbed.

In a paper before the Engineers' Society of Western Pennsylvania (July, 1917, Proceedings) George H. Barbour, advocating broad versus deep rails, an issue quite dissociated from the matter of steel or wooden ties, observed in his introduction that the principles of track construction now observed in railways throughout the world were developed between 1828 and 1833 by American railway engineers, who instituted that notable mechanico-structural achievement, not generally un-

derstood, at once resilient and reliable, through which the dynamic energy of a train dies out in static pressure on the soil, a fortunate combination, indispensable to railroad operation, in which the equipment on its track constitutes a flexible superstructure upon an elastic roadbed." Mr. Barbour did not mention the steel tie, and perhaps did not even have it in mind, which makes his words all the more significant. The steel tie detracts from this desired flexibility.

Of late the production of railroad ties has been less than 50,000 tons a year, about 200 tons per mile of track being required in the case of standard construction, the production therefore representing less than 250 miles of track a year. Given an average of ten years' life for a wooden tie over 30,000 miles of steam railroad track must be relaid every year.

The steel tie, however, is very useful in yards and terminals where speeds are slow, the service particularly heavy, and interruptions to traffic particularly undesirable. It is also useful in works where there is danger of fire, from transportation of molten metal, etc.

In light industrial track, and in mines, steel ties are especially useful through the readiness with which track is put together and taken apart again. Behind the trenches in France they have gone even farther, as instead of setting up track in place, whole sections are put together, rails, ties and all, and transported to the point where the track is to be laid.

Earnings in the Steel Industry

It is certainly that an excess profits tax will be enacted makes an awkward situation for steel companies that desire to report their earnings. Death and taxes are commonly spoken of as the two certainties in this world, hence an earnings report that does not allow for taxes is not precisely a correct report. The Steel Corporation was quite unable to make any provision for the excess profits tax in the case of its report for the first quarter, as there was no law even in its formative stages. In the case of its second quarter earnings there was a basis upon which to go. Accordingly the Corporation reported its earnings month by month for the second quarter, with the allowance deducted, and then from the surplus for the half year it made a deduction to cover the tax for the first quarter. This left it that its reports for the two quarters are not comparable, except by a little computation, thus:

	First.	Second.
Total profits	\$113,121,018	\$144,498,076
The tax	33,865,000	53,918,872

Remaining profits \$79,256,018 \$90,579,204

In order to show monthly earnings for the second quarter of this year that will be comparable with earnings in previous months we have allocated the tax to the months, approximately, whereby the following comparative statement can be made of monthly earnings, with no excess profits tax deducted:

	1916.	1917.
January	\$18,794,913	\$36,074,425
February	19,196,396	33,416,171
March	22,722,316	43,630,422
April	25,423,676	45,500,000
May	27,554,899	49,000,000
June	28,147,473	50,000,000
July	25,650,006	
August	29,746,903	
September	30,420,158	
October	35,177,393	
November	36,443,543	
December	34,296,503	
Total	\$333,574,177	\$469,835,222

The variations in the rate at which earnings increased are not without interest. Variations in the tonnage output had something to do with the fluctuations, but hardly as much as the variations in the prices realized on shipments. The steel market did not advance at a constant pace. From April to July, 1916, there was scarcely any advance. Accordingly, seven or eight months later there was a period which would have been one of practically stationary earnings, but which on account of bad weather and freight congestion was converted into one of decreased earnings, the November earnings not being exceeded until the following March. While quoted prices in the steel market continued to advance to the beginning of July the corporation did not follow the advance towards the end of its increase in invoice prices will cease a few months hence. There are some increases still due, but probably not increases in earnings for July and August, on account of hot weather curtailing production.

Shipments in June may be estimated at about 1,250,000 gross tons, the \$50,000,000 profits therefore representing an average of \$40 per ton, against \$21.46 in 1916, \$15.51 in 1907, the best year between 1902 and 1916, and \$7.95 in 1914, the poorest year in the Corporation's history.

We estimate roughly that the Corporation's shipments in June were at prices which, if averaged in the same manner as is done in making up our composite finished steel, would bring out 3.00c. The composite actually averaged 2.97c last October, which was eight months before June, and at that time its unfilled tonnage reports showed it was booked for eight months. Our composite now stands at 5.80c, which is \$63 per gross ton more, so that if it were able to realize present quoted prices on its shipments the Corporation instead of earning \$40 a ton as it did in June would make \$100 per ton, which would be \$125,000,000 instead of \$50,000,000. Of course the comparison is not exact for there is

some tonnage, including rails, which has not been subject to the same market advance as the finished products used in making up the composite, but

the difference is not great. The computation shows what an impossible price structure is now being quoted as "the market".

The Steel Corporation's Earnings

The Steel Corporation's report of earnings during the second quarter of the year indicates that there was quite a large increase in prices realized on shipments. Earnings were \$43,630,422 in March and \$144,498,076 in the June quarter, before allowance was made for the extra taxes. Allowing for the number of shipping days in the respective periods, and also making an allowance for profits in ore transportation during the second quarter, we deduce that the earnings per ton were about \$31.60 in March and about \$37.50 in the second quarter, which would show an increase of \$6 a ton from the March average to the average for the second quarter, representing in essence an interval of two months.

Such an increase, however, was quite to be expected. It will be recalled that there was a sharply advancing market in steel products from October, 1915, to March, 1916, inclusive. That caused earnings per ton from four to six

months later to increase quite sharply. Then there was an interval, from April to September inclusive, 1916, in which the market hardly advanced at all. That was followed by practically stationary earnings from October to February inclusive. The rapid price advances that began last October began to be reflected in earnings in March, which were much in excess of those of any previous months, and the increase has naturally continued through the second quarter.

For the current quarter there will be, by a continuance of the same influence, a further increase in profits per ton, but shipments for both July and August are likely to run lighter, and the earnings by months will show little if any increase. Next September or October will show the largest earnings for a month, and if prices begin to readjust themselves by that time there may be decreases thereafter.

Lake Superior Iron Ore.

Shipments of iron ore down the lakes have been as follows, in gross tons:

	1913.	1914.	1915.	1916.	1917.
April	866,386	269,686	503,832	1,658,411	211,532
May	7,284,212	3,852,063	5,012,359	8,449,580	6,283,612
June	7,974,444	5,502,367	6,005,091	9,507,576	9,639,661
July	8,204,416	5,784,514	7,204,021	9,750,157	
August	7,677,601	5,869,477	8,081,117	9,850,140	
September ..	7,258,413	5,431,307	7,863,146	9,600,786	
October	6,526,103	4,242,392	7,146,873	9,116,196	
November ...	3,270,958	1,070,092	4,445,129	5,715,452	
December ..	18,545	.....	57,236	1,085,900	
Season Lake	49,070,478	32,021,897	46,318,804	64,734,198	16,135,115

Steel Plants.

XXI.—The Gary Slabbing Mill.

The slabbing mill was invented for the purpose of increasing the output of the plate mill, hence slabbing mills should be of particular interest at this time, when ships are needed and ships depend largely upon plates. The largest slabbing mill in the world is located at the Gary works of the Steel Corporation. The plant is owned by the Indiana Steel Company but is leased to the Illinois Steel Company, which operates it and sells the product. The slabbing mill has a capacity of 20,000 tons a month and was first operated June 29 1914. Its capacity is in excess of the capacity of the plate mills.

Before the slabbing mill was introduced the plate mill had to depend upon slabs produced in blooming mills. It is the principle in plate rolling that the length of the slab becomes the width of the plate, the steel being rolled crosswise, so to speak. To produce a given length and thickness of plate, the thickness of the slab had to be varied, as its width would be constant, depending on the width of the grooves in the blooming mill.

The slabbing mill is a universal mill, i.e., having vertical as well as horizontal rolls. The vertical rolls are moved sidewise to vary the width of the slab, the horizontal rolls being moved vertically to vary the thickness of the slab. Thus the amount of work done respectively by the slabbing mill and its attendant plate mill or plate mills can be varied. The slabbing mill can make the slabs thinner and wider, giving the plate mill so much less

elongation to accomplish, or it can make the slabs thicker and narrower, passing on more work to the plate mill.

The Gary slabbing mill, the largest in the world, can roll slabs up to 60 inches wide, weighing up to 20 tons, and using ingots from 20x24 inches, the standard Gary size, up to 30x64 inches. The vertical rolls can be brought to 12 inches separation, and thus besides slabs the mill can roll small billets for axles and tie plates as well as very large forging billets.

The horizontal rolls are 36 inches in diameter with 84 inches face and 26½ inch necks. These rolls are driven by a twin tandem compound geared reversing engine, cylinders 44 and 76 inches in diameter by 60 inches stroke. The vertical rolls are driven by a separate compound engine of an unusual type, having three cylinders, all 44 inches in diameter by 48 inches stroke, one being high pressure and the other two low pressure.

The roller table on the delivery side extends 161 feet eight inches to the hydraulic shear, which is particularly powerful and is built much like a hydraulic press. It has two actuating cylinders, arranged tandem, one having a capacity of 1,200 tons pressure and the other a capacity of 2,400 tons. Either or both may be used, giving pressures of 1,200, 2,400 or 3,600 tons as desired, according to the section to be sheared. The 3,600 tons maximum is equivalent to a cut of 20x60 inches.

The Iron and Steel Situation.

Features of July.

Scrap prices declining.
Pig iron prices softening.
Steel prices stationary.
General stagnation.

Many reviewers would name President Wilson's "appeal" published July 12th, as the principal factor in iron and steel market history in July. The President urged mine owners and manufacturers to "forego unusual profits" at this time and enunciated a doctrine that there should be one price for all, the Government, its Allies and the ordinary buyer.

Certainly the statement gave a shock. There was no threat, it was simply an appeal, but if the appeal were not heeded the Government might find means to intervene and bring about much lower prices. Business became extremely quiet and in the days that followed it was natural to date the "stagnation" by the time of the President's appeal. Those who observed how difficult, if not impossible, it would be to have a smooth running market with the one-price principle in effect ascribed the halt largely to a feeling on the part of business that it had been asked to do the impossible, upon which naturally it would cease to do anything.

But the stagnation was not produced by President Wilson's statement. That was made public July 12. Our review of one month ago, written more than a week earlier, said at the outset: "The iron and steel market has become simply impossible. The form of the market remains without the substance." Allotting all due weight to the contention that what President Wilson proposed was impossible, the iron and steel market had a prior right to the impossible. It had already embarked on an impossible course and was facing nothing discernible.

Discussion as to who was responsible for what occurred was interesting and perhaps useful a few months ago, but at present it is not. We must be impersonal and so we shall say "the mar-

ket". If the market had wished to embarrass the Government in placing orders for steel and indeed force it to ignore everything but the cost of production, it could not have done better than it did. Prices became impossible. The average price of the finished steel being delivered on July 1st was double the average market price in the three years preceding the war, yet the prices then quoted as "the market" were practically double those prices again. The prices being paid on steel delivered amounted, on a year's output, to about \$1,150,000,000 more than if on the pre-war basis. The additional amount the public would pay if it bought a year's output at the quoted prices would be say \$2,000,000,000 more, at a time when engaged in a war to protect the very life of our country it was doubted whether it could pay the Government \$1,800,000,000 in taxes to prosecute that war.

Naturally steel buying was disposed to stop. Some of the large steel interests had foreseen what was coming, and stopped advancing their prices in April. Thereafter, with their offerings out of the market, prices had advanced all the more rapidly. They were, however, merely prices on relatively early deliveries. The buyers were those who needed a little extra tonnage, to average with much cheaper material, or those who made products in which the cost of the raw material was almost a negligible item.

The Psychological Moment.

Business might have let go slowly or rapidly. It had begun to let go in unmistakable manner but the time required to produce complete stagnation was uncertain. Then, if there ever was such a thing, President Wilson spoke at "the psychological moment". Immediately the stagnation was complete. Results were secured. For the orderly conduct of business it was necessary that consumers should be offered lower prices, else many of them would be put out of business. They could not pay taxes and later on the steel makers

would be lacking in customers. As a rule they do not sell their products to the ultimate consumer but to the manufacturer who produces wares the people actually use.

There had been much discussion, prior to July, as to the necessity or desirability of the Government regulating prices in the iron and steel industry, as has been done in England almost from the beginning of the war. The Administration was powerless to effect such regulation; such power would have to be granted by Congress, and the expediency was doubtful.

If the market could be induced to regulate itself, to establish a safe and sane basis, one that would protect the interests of producers and consumers alike, allow production and consumption to go on, with both consumers and producers able to pay taxes, an ideal condition would exist.

In furtherance, in stimulation, of such a natural readjustment, the Presi-

dent's appeal was most timely. That is not all that has been done. Most of the steel ordered by the Government has been without final settlement as to the price. Purchases against the needs of our Allies have been largely held back. An export embargo on certain products, without special license, became effective July 15th. An extension of the embargo list is intimated as likely for August 10th. All these matters are influences calculated to bring the market to time.

When Will Readjustment Come?

One more influence may come. The Food Bill empowers the President to fix prices on "food, feed and fuel," including coke and coke price regulation is probable. This would react upon pig iron and to an extent upon finished steel.

Then the market is to be left to work out its own salvation. If it cannot do so Congressional intervention may be-

Pig Iron Prices.

(Averaged from daily quotations: at Philadelphia, Buffalo, Cleveland and Chicago, prices are delivered.)

	Bessemer.	Basic.	No. 2 fdy.	Basic.	No 2 X fdy.	Cleve-	No. 2 fdy.	Ferro-	Fur-		
	Valley	Phila.	Phila.	Buffalo.	land.	Chi-	Birm-	mangan-	ence.		
						ago.	ingham.	ese.	coke x		
1916.											
Jan. . .	21.00	18.00	18.50	19.24	19.71	18.25	18.80	19.00	14.92	115.40	2.14
Feb. . .	20.50	17.88	18.50	19.50	19.75	18.25	18.80	19.00	14.64	139.00	1.41
Mar. . .	20.67	18.48	18.50	19.60	19.77	18.77	18.86	19.24	15.00	175.00 ⁷	1.45
April . .	21.00	18.48	18.50	20.50	20.20	19.25	19.00	19.50	15.00	175.00	2.45
May . .	21.00	18.21	18.44	20.50	20.25	19.15	19.08	19.50	15.00	175.00	2.34
June . .	21.00	18.25	18.39	19.90	20.04	18.75	19.30	19.50	14.63	175.00	2.14
July . .	21.00	18.00	18.25	19.15	19.75	18.75	18.80	19.50	14.00	175.00	1.75
Aug. . .	21.00	18.00	18.27	19.00	19.58	18.75	18.57	19.17	14.00	175.00	2.25
Sept. . .	21.32	18.27	18.58	19.50	19.50	19.04	18.67	18.75	14.38	165.00	2.34
Oct. . .	20.81	20.17	20.56	20.52	20.58	20.48	19.87	19.79	15.35	165.00	2.40
Nov. . .	20.40	21.80	25.60	24.68	25.00	27.31	24.58	25.70	19.72	165.00	3.91
Dec. . .	24.84	29.84	29.84	29.84	30.27	33.81	30.48	29.34	23.38	170.00	—
Year . .	23.05	19.87	20.16	10.96	21.20	20.67	20.40	20.67	15.84	164.12	3.94
1917.											
Jan. . .	35.00	30.00	30.00	30.00	31.48	35.25	30.95	30.50	24.27	175.00	9.44
Feb. . .	35.00	30.00	30.00	30.45	31.96	35.25	31.78	31.42	24.13	210.00	10.77
Mar. . .	36.70	31.93	34.96	33.93	37.01	35.81	36.21	35.65	29.67	270.00	9.78
April . .	41.36	38.52	39.16	39.40	41.75	40.09	39.30	39.34	33.76	325.00	8.60
May . .	44.12	41.46	42.65	40.75	43.07	41.75	41.49	43.15	36.62	400.00	8.40
June . .	53.50	49.23	46.50	46.86	46.90	46.90	48.99	50.04	40.92	400.00	11.35
July . .	55.56	53.52	53.00	51.15	52.75	50.80	54.30	55.50	45.36	400.00	11.72
	Contract	price	delivered.	+	Et	seq.	Domestic	delivered.	x	Prompt	cash
										Delivered	Delivered

* Contract price delivered. † Et seq. Domestic delivered. x Prompt. Cook, Connorsville

sonably be expected. The market, however, will probably be able to perform the task. Always it has done so in the past but usually it has taken too long. This time the readjustment is being, and will be, stimulated. It is a case of working off the major portion of the tonnage on books, until buyers and sellers reach attitudes, respectively, from which they can agree upon a trading basis. The different branches of the steel industry are sold up approximately as follows:

Rails.—Sold up through 1918 and into 1919, but to much less than full capacity, space being left for rolling billets, sheet bars and large rounds for shrapnel.

Plates.—Many large plate mills sold up for more than a year. Some smaller mills only for a few months. Some new capacity coming in, with very little tonnage sold against it.

Shapes.—Relatively little tonnage on books. Bridge Builders' and Structural Society reported average bookings

in the first half of the year at 59%, June showing only 47½%.

Bars.—Only a little contract business closed for first half 1918. Jobbers covered for three months or less.

Sheets.—Leading interest sold up through December. Independents sold up for three months at least.

Tin Plate.—Sold up through December.

Wire.—Manufacturing consumers are commonly given contracts for six months at a time, jobbers for 60 days. Probably sold up by somewhat more than this amount.

Tubular Goods.—Seamless tubing sold up very far ahead, welded boiler tubes nearly as far. Other tubular goods for a few months.

Definite steps towards the development of a trading basis for steel products generally will hardly occur $\frac{1}{2}$ less than two months. They can hardly be deferred until the end of the year.

Premonitions.

There have been some premonitions

Finished Steel Prices.

(Averaged from daily quotations, f.o.b. Pittsburgh.)

	Shapes	Plates.	Bars.	Pipe.	Wire.	Grooved			Sheets			Comp. Fin. steel.	
						Wire Nails.	Steel Skelp.	Black.	Galv.	Blue Annld.	Tin plate.		
1916.													
January	1.87	1.90	1.87	76½	1.98	2.13	1.75	2.60	4.75	2.55	3.75	2.1410	
February	2.06	2.16	2.06	75½	2.11	2.26	1.94	2.60	4.80	2.65	3.83	2.2988	
March	2.36	2.53	2.36	73½	2.25	2.40	2.24	2.73	4.93	2.85	4.20	2.5579	
April	2.50	2.75	2.50	71½	2.25	2.40	2.35	2.89	5.00	2.95	4.70	2.7166	
May	2.50	2.83	2.50	70	2.45	2.50	2.35	2.90	5.00	3.00	5.46	2.8043	
June	2.50	2.90	2.50	70	2.45	2.50	2.35	2.90	4.80	3.00	5.75	2.8300	
July	2.50	2.90	2.50	70	2.45	2.50	2.35	2.90	4.40	2.90	6.00	2.8425	
August	2.54	2.94	2.56	70	2.53	2.58	2.35	2.90	4.20	2.90	5.54	2.8588	
September	2.60	3.00	2.60	69½	2.55	2.60	2.35	2.91	4.20	2.90	5.75	2.9013	
October	2.63	3.07	2.62	69	2.59	2.64	2.40	3.23	4.50	3.15	5.77	2.9747	
November	2.86	3.33	2.76	68½	2.79	2.84	2.75	3.72	5.34	3.66	6.40	3.2036	
December	3.03	3.53	2.93	66	2.95	3.00	2.85	4.40	6.27	3.65	7.18	3.4679	
Year	2.50	2.82	2.48	70½	2.45	2.53	2.34	3.06	4.85	2.99	5.34	2.8009	
1917.													
January	3.11	3.61	3.00	64	2.95	3.00	2.85	4.50	6.50	4.25	7.23	3.5249	
February	3.25	3.75	3.00	62½	2.95	3.00	2.85	4.63	6.75	4.50	7.83	3.6529	
March	3.52	4.33	3.27	60½	3.13	3.18	3.50	4.90	7.00	4.70	8.00	3.9454	
April	3.70	4.50	3.39	55	3.23	3.28	3.50	5.88	7.40	5.40	7.60	4.1965	
May	4.00	4.50	3.64	49	3.45	3.50	3.75	6.73	9.00	6.70	8.00	4.5272	
June	4.25	7.10	4.00	49	3.66	3.71	5.00	7.50	9.75	8.00	8.00	5.1587	
July	4.50	9.00	4.50	42	3.95	4.00	6.00	8.00	10.50	9.25	8.00	5.7975	

of a general price readjustment. Scrap, always sluggish to start advancing and sensitive to discount declines in steel, reached its high point the third week in June, when heavy melting steel sold at \$47, delivered Pittsburgh. A decline started within a few days, which has carried the market down to about \$31, or by 34%.

Pig iron has declined somewhat in some markets since the first week in July and has become so stagnant that further declines are recognized as probable. When basic iron at valley furnaces had sold at \$53 to \$54 for delivery in the first half of 1918, a sale was made at the close of July, 1,000 tons

for prompt shipment at \$52, forward deliveries being altogether unquotable.

In some steel products the delivery promises of mills are somewhat better but in general the mills are concealing their position under the plea that they are not in the market.

Extent of Readjustment.

There is such a wide latitude of choice that it is out of the question to attempt to guess where the readjustment will carry finished steel prices, for we have these elements, expressed in terms of our **composite finished steel**:
 Low point, December, 1914 1.42c
 Average on current shipments 3.00 3.50
 Current quotations 5.80 6.00

U. S. Steel Corporation's Operations.

Earnings and Unfilled Orders.

Earnings by Quarters.

Net earnings by quarters since 1911:

Quarter.	1917.	1916.	1915.
1st	\$113,121,018	\$60,713,624	\$12,457,809
2nd	790,579,204	81,126,048	27,950,055
3rd		85,817,067	38,710,644
4th		105,965,347	51,277,504
Year ...		333,625,086	130,396,012

* Excess profits expected to be deducted, \$32,865,000.

† After deducting expected excess profits tax, \$53,918,872.

	1914.	1913.	1912.
1st	\$17,994,382	\$34,426,802	\$7,182,973
2nd	20,457,596	41,219,815	25,102,266
3rd	32,276,002	38,450,400	30,063,512
4th	10,965,635	23,084,330	35,181,922
Year ...	71,663,615	137,181,345	108,174,673

Unfilled Orders.

(At end of the Quarter.)

First Second Third Fourth.

1901 ..	4,136,961	3,192,277	3,027,436	4,696,203
1905 ..	5,579,560	4,829,655	5,865,377	7,603,086
1906 ..	7,018,712	6,809,584	7,936,884	4,489,718
1907 ..	8,043,858	7,603,878	6,425,008	4,642,553
1908 ..	3,765,343	3,313,876	3,421,977	3,603,527
1909 ..	3,542,590	4,057,939	4,796,833	5,927,031
1910 ..	5,492,514	4,237,194	3,158,106	2,674,757
1911 ..	3,447,301	3,301,058	3,614,317	5,084,761
1912 ..	5,301,841	5,807,346	6,551,507	7,932,164
1913 ..	7,468,956	5,807,317	5,003,785	4,282,108
1914 ..	4,653,825	4,032,857	3,787,667	3,836,643
1915 ..	4,255,749	4,678,496	5,317,608	7,805,220
1916 ..	9,331,001	9,640,458	9,522,584	11,547,286
1917 ..	11,711,644	11,383,287		

Bookings and Shipments.

In this table, first two columns, percentages of bookings and shipments to total capacity, our own estimates, while last column, is derived from official reports of "unfilled tonnage" while third percentage column, is directly computed from this tonnage column.

	Ship-ments.	Book-ings.	Dif-ference.	Dif-ference.
1915—	%	%	%	Tons.
May	74	85	+ 9	+102,354
June	70	115	+34	+413,598
July	80	104	+21	+250,344
August ..	91	89	- 2	- 20,085
September ..	78	100	+22	+409,163
October ...	103	172	+69	+847,804
November ..	102	180	+78	+1,024,037
December ..	102	172	+70	+615,731
1916—				
January ...	102	142	+40	+116,547
February ..	102	157	+55	+646,199
March	104	164	+60	+762,005
April	104	146	+42	+498,550
May	104	115	- 9	+108,247
June	104	87	-27	-297,340
July	90	86	- 4	- 46,866
September ..	96	87	- 9	-137,773
October ...	106	145	+39	+492,676
November ..	104	180	+76	+1,043,282
December ..	96	156	+60	+488,744
1917—				
January ...	92	86	- 6	- 73,232
February ..	92	101	+ 9	+102,643
March	97	107	+10	+134,947
April	99	137	+38	+471,439
May	98	75	-23	-296,492
June	98	59	-39	-503,304

Total unfilled obligations, June 30, 1917, 11,383,287 tons.

Tin Plate Movement.

United States imports and exports of tin plate in gross tons have been as follows, the imports of course including those for blackback purposes:

	Imports.	Exports.
1906	56,983	12,082
1907	57,773	10,293
1908	58,490	11,878
1909	62,592	9,327
1910	66,640	12,459
1911	14,098	61,466
1912	2,053	81,694
1913	20,680	57,812
1914	15,411	59,549
1915	2,350	154,642
1916	1,008	227,391
January, 1916	62	12,178
February	107	13,534
March	44	20,363
April	179	21,385
May	39	25,585
June	91	29,751
July	150	18,760
August	105	18,757
September	51	18,770
October	111	14,195
November	38	15,816
December	34	18,229
January, 1917	31	23,408
February	35	14,632
March	21	21,680
April	34	19,936
May	2	23,283

The United Lined Tube & Valve Company, Boston, has been incorporated with authorized capital stock of \$100,000. The directors are D. William Wade, 162 Congress Street, Boston, president and treasurer; M. S. Coggan and J. W. Troy.

The World Aeroplane Company, Buffalo, has been incorporated with a capital of \$1,000,000, to manufacture aeroplanes and hydroplanes. E. H. and H. E. Crowder and J. H. Kalmar, Buffalo, are the incorporators.

The Sunlight Electrical Mfg. Co., Warren, O., has been organized with a capital stock of \$50,000 to make electrical goods. Incorporators are C. L. Wood, C. H. Mills, C. Sadler, R. Wick.

Car and Locomotive Buying.

Freight Cars Ordered.

1915: Domestic	105,000	
Export	20,000	
Total, 1915		125,000
1916: Domestic	105,000	
Export	29,000	
Total, 1916		194,000
1917: Domestic	42,088	
Export	29,800	
January	16,840	
February	19,566	
March	9,681	
April	1,777	
May	12,298	
June	6,055	
Six months		66,218
July	5,940	

Locomotives Ordered.

1915: Domestic	1,500	
Export	800	
Total, 1915		2,300
1916: Domestic	2,850	
Export	2,900	
Total, 1916		5,750
1917: Domestic	2,016	
Export	2,998	
January	801	
February	299	
March	232	
April	339	
May	1,276	
June	575	
Six months		3,528
July	148	

STRUCTURAL STEEL LETTINGS

Reports of the Bridge Builders' and Structural Society, lettings of structural steel contracts by months in percentage of the fabricating capacity, capacity being now about 180,000 tons a month.

	1914.	1915.	1916.	1917.
January	62	25	69	61½
February	63	30	75	59
March	76	64	102	68
April	88	62½	72½	61
May	57	61	80	56½
June	56½	80	58	47½
July	68	86	47½	
August	27½	85	64	
September ..	38½	67	52½	
October	35	78	77	
November ..	20	105	78	
December ..	35	121	86	
Annual	52½	72	71½	

Comparison of Metal Prices.

	Range for 1915		Range for 1916		Range for 1917		Closing.
	High.	Low.	High.	Low.	High.	Low.	July 31, 1917.
Pig Iron.							
Bessemer, valley	21.00	19.00	25.00	20.00	55.00	35.00	55.00
Basic, valley	18.00	17.50	30.00	17.75	54.00	30.00	52.00
No. 2 foundry, valley	18.50	12.50	30.00	18.25	53.00	30.00	53.00
No. 2X fdy, Philadelphia ..	19.50	14.00	30.75	19.50	52.75	30.75	52.75
No. 2 foundry, Cleveland ..	18.80	13.00	30.95	18.50	54.30	30.95	54.30
No. 2X foundry, Buffalo	18.00	11.75	25.00	18.00	52.00	35.00	50.00
No. 2 foundry, Chicago ..	18.50	13.00	30.00	18.00	55.00	30.00	55.00
No. 2 South'n Birmingham	14.50	9.25	25.00	14.00	48.00	24.00	45.00
Scrap Iron and Steel.							
Melting steel, Pittsburgh ..	18.00	11.00	27.00	16.00	47.00	22.00	31.00
Heavy steel scrap., Phila. ..	16.25	9.50	24.50	14.75	42.00	20.50	32.00
Heavy mel., steel, Chicago ..	15.75	8.75	24.00	14.50	43.00	21.50	31.00
No. 1 R. R. wrought, Pitts. ..	17.25	10.75	29.00	17.50	47.00	19.50	39.00
No. 1 cast, Pittsburgh	15.00	11.00	23.50	14.75	38.00	19.75	31.00
Iron and Steel Products.							
Bessemer rails, mill	28.00	28.00	38.00	28.00	38.00	38.00	38.00
Iron bars, Pittsburgh	1.90	1.29	3.25	1.90	5.25	3.25	5.25
Iron bars, Philadelphia	2.06	1.12	3.16	2.06	5.16	3.16	4.91
Steel bars, Pittsburgh	1.80	1.10	3.00	1.85	4.50	3.00	4.50
Tank plates, Pittsburgh ...	1.60	1.10	3.60	1.85	9.00	3.50	9.00
Structural shapes, Pitts. ..	1.80	1.10	3.10	1.85	4.50	3.10	4.50
Grooved steel skelp, Pitts. ..	1.75	1.12½	2.85	1.75	6.00	2.85	6.00
Black sheets, Pittsburgh ..	2.60	1.70	4.50	2.60	9.00	4.50	8.00
Galv. sheets, Pittsburgh ...	5.00	2.65	6.50	4.15	11.00	6.25	10.00
Tin plate, Pittsburgh	3.60	3.10	7.50	3.75	8.50	7.00	8.25
Wire nails, Pittsburgh	2.10	1.50	3.00	2.10	4.00	3.00	4.00
Steel pipe, Pittsburgh	79%	83%	64%	78%	42%	64%	42%
Connellsville Coke at ovens.							
Prompt furnace	3.50	1.50	12.00	2.50	16.00	8.00	11.50
Prompt foundry	3.75	2.00	12.00	3.25	16.00	10.00	12.50
Metals—New York.							
Straits tin	57.00	32.00	56.00	37.50	66.50	42.50	63.75
Lake copper	23.00	13.00	36.00	23.00	37.00	27.75	29.75
Electrolytic copper	23.00	12.80	36.00	23.00	37.00	25.75	28.25
Casting copper	22.00	12.70	34.00	22.00	34.00	25.00	27.25
Sheet copper	27.25	18.75	42.00	28.00	44.00	36.00	37.00
Lead (Trust price)	7.00	5.70	7.50	5.50	11.00	7.50	11.00
Spelter	27.25	5.70	21.17½	8.37½	11.50	8.42½	8.67½
Chinese and Jap. antimony	40.00	1.00	45.00	10.50	36.00	14.25	15.12½
Aluminum, 98-99%	60.00	18.75	67.00	53.00	64.00	48.00	49.00
Silver	56½	46½	77½	55½	81½	71½	78½
St. Louis.							
Lead	7.50	5.50	8.25	5.45	12.00	7.30	10.75
Spelter	27.00	5.55	21.00	8.20	10.87½	8.25	8.50
Sheet zinc (f.o.b. smelter)	33.00	9.00	25.50	15.00	21.00	19.00	19.00
London.							
Standard tin, prompts	£ 190	£ 148½	£ 205	£ 161½	£ 256½	£ 180½	£ 247
Standard copper, prompts ..	86½	57½	154	84	146	125	125
Lead	30½	18½	36	27¾	30½	30½	30½
Spelter	110	28½	110	44	55	45½	54
Silver	57½d	42½d	57d	26½d	41½d	35½d	39½d

Comparison of Security Prices:

	Range for 1915		Range for 1916		Range for 1917		Closing, July 31, 1917.
	High.	Low.	High.	Low.	High.	Low.	
Iron and Industrial Stocks.							
Alas-Chalmers Mfg.	49½	73¼	58	79	32½	20	29
Alas-Chalmers Mfg. pfd.	85½	35	92	70	86½	70	80
American Can	68½	25	68	44	51	30	48
American Can pfd.	113½	89	115½	107½	111	103	107½
American Car & Fdy.	98	40	78½	52	80¾	57	76½
American Locomotive	733¼	19	98	58	82½	62	72½
American Smelt'g & Refining	108½	56	123½	88	112½	66	102½
American Steel Foundries ..	74½	24½	76	44	75	32	68
American Zinc, Lead & Smelt'g	67½	97	97	29½	41½	22	25
Anaconda Copper	915½	49½	105½	77	87	70	77
Baldwin Locomotive	154½	26½	118½	52	76	43	73
Bethlehem Steel	600	46½	700	415	515	119	132
Bethlehem Steel pfd.	184	91	168	126	135	117½	120
Chino Copper	57½	32½	74	46	63½	48	55½
Colo. Fuel & Iron Co.	66½	21½	61	38	58	38	50
Crucible Steel	109½	18½	99	50	91½	50	81½
Crucible Steel pfd.	112½	84	124	108	117½	102	102½
Driggs-Seabury .....	...	...	119½	45½	87½	39½	79
General Electric	185½	138	187	159	171½	149½	154½
Granby Consolidated	91	79¼	120	80	92¾	75½	82
Great Northern Ore Prop. ..	54	25¼	50¾	32	38	25½	33
Gulf States Steel .....	...	...	194	71	137	99½	118
International Harv. of N. J. ..	114	90	126½	108½	123	107½	113
Inter. Harv. of N. J. pfd. ..	85	55	122	114	121	114	118
International Harv. Corp. ..	114	90½	90	68½	88	65	72
Inter. Harv. Corp. pfd.	120	100	114½	104½	114	101	101
Lackawanna Steel	94½	28	107	64	104½	70	92
National Enam. & Stamp.	36½	9½	36½	19¾	45½	24	44
National Enam. & Stamp. pfd.	97	79	100	90	101	90	90½
National Lead	70¾	44	74½	57	63	52	56
National Lead, pfd.	115	104½	117	111½	114	101	109
New York Air Brake	164½	56½	186	118	156	127	134½
Pressed Steel Car	78¼	25	88	42	80½	70	73
Pressed Steel Car, pfd.	106	86	108	8	106	100	102
Railway Steel Spring	54	19	61½	32	58	46	52
Railway Steel Spring pfd. ..	102	86½	104¾	95¼	101	94	98
Ray Consolidated Copper	27½	15¾	37	20	32½	23	28
Republic Iron & Steel	57¼	19	93	42	94½	60	90½
Republic Iron & Steel, pfd. ...	112½	72	117	101	105½	99	103½
Sloss-Sheffield	66½	22	96½	37	74½	42½	54
Sloss-Sheffield, pfd.	102	85	103½	91	99	91	95
Texas Company	237	120	241	177½	243	185	186½
U. S. Cast Iron Pipe	31¾	8	28½	16½	24	17	21½
U. S. Cast Iron Pipe pfd.	55½	32½	67½	49½	62¾	54	57½
U. S. Smelting & Refining ...	...	...	81	57	67½	52	58
U. S. Smelting & Refining pfd. ...	...	...	53½	50	52½	49½	49½
U. S. Steel Corporation	89½	38	129¾	79¾	136½	99	122
U. S. Steel Corporation, pfd. ...	117	102	117	115	121	116½	119
Ural, Copper	81¾	48½	137	73½	118½	97	104
Virginia Iron, Coal & Coke ..	74	26	72½	41	77	46	68½
Westinghouse Elec. & Mfg. ...	74¾	32	71½	51¼	56	45½	48½

Railroad Earnings.

Railroad earnings per mile of road, having annual operating revenues above \$1,000,000, this being about 230,000 miles or about 90% of the total steam railway mileage; compiled by the Bureau of Railway Economics from reports furnished the Interstate Commerce Commission.

	1913-14			1914-15			1915-16		
	Revenue.	Expense.	Net.	Revenue.	Expense.	Net.	Revenue.	Expenses.	Net.
July	\$1,183	\$837	\$346	\$1,127	\$786	\$341	\$1,130	\$750	\$380
August ..	1,244	856	388	1,174	788	386	1,190	764	426
September	1,257	854	403	1,185	783	402	1,251	774	477
October ..	1,314	891	423	1,171	787	384	1,323	815	508
November	1,180	884	297	1,026	734	292	1,303	801	502
December.	1,116	821	296	993	730	263	1,253	802	451
January ..	1,021	795	226	939	718	221	1,133	798	335
February ..	914	746	168	900	680	220	1,141	801	340
March	1,091	801	290	1,015	722	293	1,260	844	416
April	1,038	782	256	1,013	724	289	1,223	827	396
May	1,047	800	247	1,044	735	309	1,306	856	450
June	1,097	789	308	1,094	732	362	1,302	851	451
Fiscal year	13,483	9,801	3,682	12,678	8,915	3,763	14,818	9,684	5,134

1916-17		
	Revenue.	Expenses. Net.
August ..	1,418	882 536
September	1,409	881 528
October ..	1,466	910 556
November	1,396	894 502
December	1,345	905 440
January ..	1,301	930 371
February ..	1,147	899 248
March	1,373	992 381
April	1,383	986 397
May	1,498	1,034 464

Wage Scale Averages.

Sworn averages of prices obtained by mills for shipments in months named, used in fixing wages under Amalgamated Association sliding scales.

	Bar Iron.			
	1914.	1915.	1916.	1917.
Jan.-Feb.	1.1590	1.024	1.40	2.35
Mar.-April	1.176	1.087	1.60	2.45
May-June	1.1257	1.10	1.85	2.65
July-Aug.	1.0928	1.15	1.95	
Sept.-Oct.	1.0847	1.15	2.00	
Nov.-Dec.	1.037	1.30	2.15	
Year's av.	1.1125	1.144	1.83	

Sheets and Tin Plates.

	Sheets.		Tin Plates.	
	1916.	1917.	1916.	1917.
Jan.-Feb.	2.35	3.40	3.50	4.95
Mar.-April	2.50	3.90	3.70	5.75
May-June	2.60	4.45	3.90	6.85
July-Aug.	2.70		4.05	
Sept.-Oct.	2.75		4.10	
Nov.-Dec.	2.80		4.25	
Year's av.	2.60		3.92	

Pig Iron Production.

Rates per annum, including charcoal pig.

April	39,600,000
May	39,800,000
June	39,500,000
July	38,350,000
August	39,200,000
September	39,300,000
October	41,700,000
November	40,700,000
December	37,700,000
January 1917	37,460,000
February	34,750,000
March	38,600,000
April	40,900,000
May	40,600,000
June	37,200,000
On July 1st	41,300,000

Actual production:

1910	27,302,567
1913	30,966,152
1914	23,332,244
1915	29,916,213
1916	39,434,797

Composite Steel.

Computation for August 1, 1917.

Pounds.	Group.	Price.	Extension.
1	Bars	5.50	11,750
1	Plates	6.00	11,500
1	Shapes	4.50	6,750
1	Pipe	5.65	8,425
1	Wire nails	4.00	6,000
1	Sheets 28 in.	8.00	8,000
1	Fin plates	8.00	4,000
to pounds			57,975
One pound			5.7975

Averaged from daily quotations:

	1913.	1914.	1915.	1916.	1917.
Jan.	1.7737	1.5394	1.4554	2.1410	3.553
Feb.	1.7625	1.5794	1.4716	2.2288	3.653
Mar.	1.7646	1.5608	1.5008	2.5579	3.945
April	1.7742	1.5337	1.5357	2.7165	4.196
May	1.7786	1.5078	1.5681	2.8044	4.527
June	1.7719	1.4750	1.5312	2.8500	5.139
July	1.7600	1.4805	1.5692	2.8475	5.7975
Aug.	1.7400	1.5241	1.6059	2.8788	
Sept.	1.7093	1.5632	1.6506	2.9014	
Oct.	1.6779	1.5236	1.7264	2.9747	
Nov.	1.6203	1.4769	1.9089	3.2006	
Dec.	1.558	1.4324	2.0329	3.6059	
Year	1.7241	1.5182	1.6280	2.8009	

Scrap Iron and Steel Prices.

Melting Steel. Bundled No. 1 R. R. No. 1 No. 1 Heavy Steel. Sheet Wrought Cast. Steel. Melting. Pitts. Pitts. Pitts. Pitts. Phila. Ch'go.

1915—					
Dec.	17.65	16.15	17.10	14.95	15.60 15.25
Year	13.26	10.54	12.26	12.40	12.54 10.90
1916—					
Jan.	17.15	13.40	18.00	15.10	16.30 15.60
Feb.	17.20	13.60	18.75	15.35	16.25 15.75
Mar.	18.40	14.80	19.15	15.75	17.15 16.75
Apr.	18.00	14.75	19.75	16.00	18.00 16.75
May	17.00	13.65	19.65	16.10	17.00 15.90
June	16.25	13.00	19.00	15.40	15.45 14.80
July	16.70	12.50	18.50	15.30	15.00 14.30
Aug.	16.25	11.70	18.45	15.00	15.00 15.30
Sep.	16.61	11.65	18.35	15.00	15.00 16.00
Oct.	18.25	11.65	19.30	15.80	15.65 17.35
Nov.	22.50	13.75	21.25	17.75	18.25 21.00
Dec.	25.50	16.00	22.20	21.40	24.95 23.65
Year	18.37	13.38	19.73	16.16	16.92 16.90
1917—					
Jan.	23.50	16.25	23.75	20.75	22.75 23.50
Feb.	22.50	15.75	22.50	19.75	21.15 22.25
Mar.	24.00	16.25	26.00	22.00	23.00 24.30
Apr.	27.75	17.25	30.50	24.00	25.50 27.30
May	29.25	19.25	33.00	25.25	26.50 29.00
June	40.75	24.00	40.50	32.25	34.50 38.50
July	38.75	25.35	44.00	35.50	36.00 35.50

Composite Pig Iron.

Computation for August 1, 1917.

One ton Bessemer, valley	85.00
Two tons basic, valley (52.00)	104.00
One ton No. 2 foundry, valley	55.00
One ton No. 2 foundry, Philadelphia	52.75
One ton No. 2 foundry, Buffalo	50.75
One ton No. 2 foundry, Cleveland	41.30
One ton No. 2 foundry, Chicago	55.50
Two tons No. 2 Southern foundry Cincinnati (47.00)	95.80
Total, ten tons	520.00
One ton	52.00

Averaged from daily quotations:

	1913.	1914.	1915.	1916.	1917.
Jan.	17.394	13.492	13.070	18.690	30.752
Feb.	17.140	13.721	13.079	18.564	30.946
Mar.	16.775	13.843	12.971	18.857	34.353
April	16.363	13.850	12.914	19.021	39.140
May	15.682	13.808	13.206	18.965	42.037
June	14.968	13.606	13.047	18.552	48.160
July	14.578	13.520	13.125	18.585	52.556
Aug.	14.565	13.516	14.082	18.514	
Sept.	14.692	13.503	14.895	18.697	
Oct.	14.737	13.247	15.213	20.197	
Nov.	14.282	13.047	16.398	25.243	
Dec.	13.808	13.073	17.987	30.082	
Year	15.418	13.520	14.150	20.306	

Unfinished Steel and Iron Bars.

(Averaged from daily quotations.)

	Billets. Pitts.	Sheet Bars. Pitts.	Rods. Pitts.	—Iron bars, deliv.— Phila. Pitts. Ch'go.		
1915—						
Year	22.51	22.91	28.28	1.37	1.32	1.24
1916—						
Jan.	32.50†	32.50†	42.00	2.24	2.02	1.79
Feb.	34.00†	34.00†	48.00	2.41	2.25	1.92
Mar.	41.00†	41.00†	56.00	2.56	2.40	2.17
Apr.	45.00	45.00	60.00	2.62	2.50	2.35
May	43.00	43.00	59.00	2.66	2.60	2.35
June	42.00†	42.00†	58.00	2.66	2.60	2.35
July	42.50†	42.50†	58.00	2.66	2.60	2.35
Aug.	46.00	46.00	58.00	2.66	2.60	2.35
Sep.	47.00	45.00	58.00	2.66	2.70	2.35
Oct.	48.00	48.00	59.00	2.66	2.75	2.35
Nov.	52.75	54.00	65.00	2.66	2.85	2.50
Dec.	56.96	56.96	70.00	3.02	3.19	2.89
Year	44.23	44.17	57.58	2.57	2.59	2.31
1917—						
Jan.	63.50	63.50	75.00	3.16	3.25	3.00
Feb.	65.00	65.00	77.00	3.16	3.25	3.00
Mar.	68.00	68.00	79.00	3.41	3.46	3.00
Apr.	75.00	75.00	85.00	3.41	3.62	3.25
May	88.00	94.00	93.00	4.16	3.90	3.40
June	95.00	105.00	95.00	4.75	4.51	4.15
July	95.00	105.00	95.00	4.80	5.03	4.50

† Premium for open-hearth.

Price Changes of Iron and Steel Products From February 21, 1916 to Date.

Price changes in merchant bars, structural shapes, plates, wire nails, merchant pipe, sheets and tin plates are given below, with dates. These are the commodities used in compiling our **composite finished steel**. In some cases the dates named are those upon which prominent producers announced price changes, but more frequently the rates are merely those upon which our quotations were changed. A few other price changes are included.

1916—				1916—			
Feb. 21	Shapes	2.00	to 2.25	Oct. 16	Galv. sheets	4.40	to 4.50
" 21	Tin plate	3.75	to 4.00	" 19	Wire nails	2.60	to 2.70
" 29	Pipe	75% to	74%	" 20	Sheets	3.25	to 3.35
" 29	Boiler tubes	64% to	63%	" 20	Blue ann. sheets	3.00	to 3.15
Mar. 1	Wire nails	2.30	to 2.40	" 24	Plates	3.00	to 3.25
" 8	Black sheets	2.60	to 2.75	" 25	Bars	2.60	to 2.70
" 8	Blue ann. sheets	2.65	to 2.90	" 25	Shapes	2.60	to 2.70
" 13	Bars	2.25	to 2.35	" 25	Grooved skelp	2.35	to 2.50
" 13	Plates	2.35	to 2.60	" 26	Sheets	3.35	to 3.40
" 13	Shapes	2.25	to 2.35	" 26	Galv. sheets	4.50	to 4.75
" 15	Steel pipe	74% to	73%	" 27	Blue ann. sheets	3.15	to 3.30
" 15	Boiler tubes	63% to	61%	" 30	Tin plate	5.75	to 6.00
" 23	Bars	2.35	to 2.50	" 31	Shapes	2.70	to 2.80
" 23	Shapes	2.35	to 2.50	Nov. 1	Boiler tubes	54% to	52%
" 28	Plates	2.60	to 2.75	" 6	Wire nails	2.70	to 2.85
" 29	Sheets	2.75	to 2.85	" 8	Sheets	3.40	to 3.65
" 29	Steel pipe	73% to	72%	" 15	Tin plate	6.00	to 6.25
" 29	Boiler tubes.	61% to	60%	" 15	Grooved skelp	2.50	to 2.60
April 5	Sheets	2.85	to 2.90	" 15	Pipe	69% to	68%
" 15	Boiler tubes	60% to	56%	" 18	Galv. sheets	5.00	to 5.50
" 19	Tin plate	4.50	to 5.00	" 20	Tin plate	6.25	to 7.00
" 24	Pipe	72% to	70%	" 20	Sheets	3.65	to 4.00
May 1	Wire nails	2.40	to 2.50	" 21	Bars	2.70	to 2.90
" 3	Tin plates	5.00	to 5.50	" 21	Plates	3.25	to 3.50
" 16	Plates	2.75	to 2.90	" 21	Shapes	2.80	to 3.00
June 1	Galv. sheets	5.00	to 4.75	" 21	Blue ann. sheets	3.30	to 3.40
" 16	Tin plate	5.50	to 6.00	" 21	Boiler tubes	52% to	46%
July 7	Blue ann. sheets	3.00	to 2.90	" 25	Grooved skelp	2.60	to 2.85
" 7	Galv. sheets	4.75	to 4.50	" 27	Blue ann. sheets	3.40	to 3.50
Aug. 1	Tin plate	6.00	to 5.50	" 27	Galv. sheets	5.50	to 5.75
" 7	Wire nails	2.50	to 2.60	" 27	Wire nails	2.85	to 3.00
" 15	Bars	2.50	to 2.60	Dec. 4	Pipe	68% to	66%
" 18	Shapes	2.50	to 2.60	" 4	Sheets	4.00	to 4.25
" 18	Plates	2.90	to 3.00	1916—			
" 25	Galv. sheets	4.25	to 4.15	Dec. 5	Galv. sheets	5.75	to 6.00
Sept. 7	Pipe	70% to	69%	" 11	Blue ann. sheets	3.50	to 3.65
" 7	Boiler tubes	56% to	54%	" 11	Sheets	4.25	to 4.50
" 20	Galv. sheets	4.15	to 4.25	" 11	Galv. sheets	6.00	to 6.25
" 28	Sheets	2.90	to 3.00	" 20	Tin plate	7.00	to 7.50
Oct. 3	Blue ann. sheets	2.90	to 3.00	" 21	Bars	2.90	to 3.00
" 3	Galv. sheets	4.25	to 4.30	" 21	Shapes	3.00	to 3.10
" 6	Sheets	3.00	to 3.10	" 21	Plates	3.50	to 3.60
" 7	Tin plate	5.50	to 6.00	" 26	Blue ann. sheets	3.75	to 4.00
" 13	Sheets	3.10	to 3.25	" 30	Pipe	66% to	64%
" 13	Galv. sheets	4.30	to 4.40				
" 13	Tin plate	6.00	to 5.75				

Jan. 10	Galv. sheets	6.25	to 6.50
1917—			
" 10	Blue ann. sheets	4.00	to 4.25
" 16	Tin plate	7.00	to 7.50
" 30	Shapes	3.10	to 3.25
" 30	Plates	3.60	to 3.75
Feb. 6	Tin plate	7.00	to 8.00
" 14	Pipe	64%	to 62%
" 15	Sheets	4.50	to 4.75
" 16	Blue ann. sheets	4.25	to 4.50
Mar. 5	Pipe	62%	to 60%
" 5	Wire nails	3.00	to 3.20
" 8	Bars	3.00	to 3.35
" 8	Plates	3.75	to 4.50
" 8	Shapes	3.25	to 3.60
" 14	Sheets	4.75	to 5.00
" 14	Galv. sheets	6.50	to 6.75
" 20	Blue ann. sheets	4.50	to 4.75
" 20	Galv. sheets	6.75	to 7.00
Apr. 2	Tin plate	8.00	to 7.50
" 2	Pipe	60%	to 55%
" 5	Sheets	5.00	to 5.50
" 5	Blue ann. sheets	4.75	to 5.00
" 5	Galv. sheets	6.75	to 7.00
" 18	Sheets	5.50	to 6.00
" 18	Blue ann. sheets	5.00	to 5.50
" 18	Galv. sheets	7.00	to 7.50
" 20	Sheets	6.00	to 6.50
" 20	Blue ann. sheets	5.50	to 6.00
" 20	Galv. sheets	7.50	to 8.00
" 25	Wire nails	3.20	to 3.50
" 24	Bars	3.35	to 3.50
" 24	Shapes	3.60	to 4.00
" 25	Tin plate	7.50	to 8.00
May 1	Galv. sheets	8.00	to 9.00
" 5	Pipe	55%	to 49%
" 14	Bars	3.50	to 3.75
" 14	Plates	4.50	to 5.50
" 17	Sheets	6.50	to 7.00
" 17	Blue ann. sheets	6.00	to 6.50
" 18	Galv. sheets	8.00	to 8.50
" 18	Blue ann. sheets	6.50	to 7.00
" 18	Galv. sheets	8.50	to 9.25
June 7	Plates	5.50	to 7.00
" 8	Shapes	4.00	to 4.25
" 8	Galv. sheets	9.25	to 9.50
" 13	Sheets	7.00	to 7.50
" 15	Blue ann. sheets	7.00	to 7.50
" 15	Bars	3.75	to 4.00
" 18	Plates	7.00	to 8.00
" 19	Wire nails	3.50	to 4.00
" 20	Sheets	7.50	to 8.00
" 25	Bars	4.00	to 4.50
" 25	Shapes	4.25	to 4.50
" 25	Galv. sheets	9.50	to 10.00
" 28	Plates	8.00	to 9.00
" 29	Blue ann. sheets	7.50	to 8.00
July 2	Pipe	49%	to 42%
" 4	No further changes		

Steel Making Pig Iron Averages.

Bessemer and basic pig iron averages, compiled by Messrs. W. P. Snyder & Co., from sales in the valley market of 1,000 tons and over.

	Bessemer.		Basic.	
	1916.	1917.	1916.	1917.
Jan. ..	\$20.645	\$35.00	\$17.833	\$30.00
Feb. ..	20.2136	35.418	17.984	30.00
Mar. ..	20.8625	36.423	18.25	32.537
April ..	20.70	41.332	18.00	37.996
May ..	20.833	45.9917	18.1607	41.8947
June ..	21.00	53.266	18.00	49.149
July ..	21.00	56.50	18.00	52.848
Aug. ..	21.00		18.00	
Sept. ..	21.9346		18.63	
Oct. ..	23.6576		20.3086	
Nov. ..	29.12		27.229	
Dec. ..	34.213		30.00	
Year ..	22.9316		20.0329	

Above prices are f. o. b. valley furnace; delivered Pittsburgh is 95 cents higher.

British Iron And Steel Exports.

	Pig Iron.	Rails.	Tin Plate.	Totals.*
1912 ..	1,262,383	407,175	481,123	4,930,112
1913 ..	1,124,181	500,117	494,497	5,049,090
1914 ..	780,763	433,507	435,392	3,972,348
1915 ..	611,227	242,267	368,778	3,248,046
1916 ..	917,396	50,275	321,710	3,357,829
1917—				
Mar. ..	87,284	3,366	39,482	307,488
April ..	82,976	10,510	23,337	293,897
May ..	97,967	4,103	41,868	395,750
June ..	77,487	3,243	30,351	310,595
July ...	69,999	3,485	38,174	298,929
Aug. ..	95,655	1,983	34,124	319,928
Sept. ..	72,683	2,712	19,226	331,355
Oct. ...	72,187	6,929	10,929	241,261
Nov. ..	49,986	16,411	4,571	224,554
Dec. ..	48,542	2,317	14,248	158,609
1917—				
Jan. ..	61,201	5,945	16,515	210,124
Feb. ..	59,270	851	11,069	186,308
Mar. ..	79,694	6,084	38,057	239,965
April ..	57,738	2,659	16,863	180,869
May ..	68,201	1,680	18,290	199,418
5 mos. ...	326,804	17,207	78,618	1,016,686

* Includes scrap, pig iron, rolled iron and steel, cast and wrought iron manufactures, bolts, nuts, etc., but not finished machinery, boilers, tools, etc.

Iron and Steel Imports and Exports.

Value of Tonnage and Non-Tonnage.

	1912.	1913.	1914.	1915.	1916.	1917.
January	\$18,451,914	\$25,141,409	\$16,706,836	\$18,053,421	\$51,643,807	\$108,425,640
February	21,801,570	24,089,871	16,520,260	16,470,751	54,145,496	85,117,010
March	24,474,799	27,221,210	20,551,137	20,985,505	58,266,144	111,164,876
April	26,789,853	27,123,044	20,639,569	25,302,649	58,655,447	101,560,340
May	28,050,247	26,718,970	19,734,045	26,536,612	72,926,180	107,503,005
June	24,795,802	25,228,346	18,927,958	31,730,132	76,257,844	
July	24,917,952	24,170,704	16,737,552	35,892,106	70,745,162	
August	25,450,107	23,947,440	10,428,817	37,726,657	86,296,703	
September ...	23,286,040	22,831,082	12,531,102	38,522,175	90,895,592	
October	25,271,559	25,193,887	16,455,832	43,299,457	82,010,972	
November	26,406,425	20,142,141	15,689,401	48,056,220	77,570,840	
December	23,750,864	22,115,701	14,939,613	45,825,147	88,536,958	

Totals \$289,128,420 \$293,934,160 \$199,861,684 \$388,400,832 \$867,323,044 \$514,528,700

Exports of Tonnage Lines,---Gross Tons.

	1910.	1911.	1912.	1913.	1914.	1915.	1916.	1917.
January	118,681	152,362	151,575	249,493	118,770	140,550	357,122	608,286
February	110,224	150,919	204,969	241,888	121,206	139,946	368,981	449,107
March	124,980	216,360	218,219	257,519	159,998	174,104	438,656	600,503
April	117,921	228,149	267,313	259,689	161,952	223,587	384,796	521,179
May	135,306	178,589	307,656	242,353	139,107	263,113	538,051	788,701
June	120,601	174,247	273,188	243,108	144,539	356,431	526,772	
July	127,578	162,855	272,778	237,159	114,790	380,336	503,685	
August	131,391	177,902	282,645	209,856	86,599	405,952	597,750	
September	119,155	181,150	248,613	213,057	96,476	382,118	643,767	
October	129,828	186,457	251,411	220,550	147,293	349,848	610,125	
November	155,138	187,554	233,342	175,961	140,731	362,766	554,859	
December	150,102	190,854	235,959	181,715	117,827	353,856	580,961	

Totals 1,540,895 2,187,724 2,947,596 2,745,535 1,549,554 3,532,606 6,110,790 2,774,000

Iron Ore Imports.

	1914.	1915.	1916.	1917.
Jan. .	101,804	75,286	89,844	97,440
Feb. .	112,574	78,773	94,315	86,314
Mar. .	68,549	88,402	96,983	95,989
April .	111,812	91,561	75,712	58,878
May .	125,659	98,974	148,599	66,762
June .	188,647	118,575	134,154	
July .	141,838	119,468	156,755	
Aug. .	134,913	126,806	127,094	
Sept. .	109,176	173,253	109,747	
Oct. .	114,341	138,318	95,833	
Nov. .	90,222	113,544	82,257	
Dec. .	51,053	118,321	118,043	

Totals 1,350,588 1,341,281 1,375,736 1,053,383

Iron and Steel Imports.

	1913.	1914.	1915.	1916.	1917.
Jan. .	21,740	17,776	10,568	15,824	32,991
Feb. .	25,505	14,757	7,506	20,279	29,380
Mar. .	27,467	27,829	8,025	15,159	31,280
April .	25,742	30,585	16,565	20,173	48,005
May .	28,728	28,173	28,916	32,113	20,007
June .	36,597	23,076	32,200	26,886	
July .	36,694	25,282	20,858	14,774	
Aug. .	18,740	28,768	27,557	32,257	
Sept. .	19,941	38,420	23,344	25,558	
Oct. .	20,840	22,754	34,319	30,170	
Nov. .	25,809	24,165	36,931	42,544	
Dec. .	26,454	9,493	35,409	44,133	

Total 317,260 289,778 282,443 375,743 177,747

Immigration Statistics.

Years mentioned refer to fiscal years ended June 30th. Aliens admitted include immigrant and non-immigrant; aliens departed include emigrant and non-emigrant.

Excess Arrivals Over Departures.

	Aliens.	Citizens.	Total.
1915	815,303	*61,098	754,205
1914	769,276	*82,211	687,065
1913	50,970	67,167	117,237
1916	125,941	11,197	137,138

July, 1915	11,082	3,912	14,994
August	*14,324	*804	*15,128
September	*1,265	866	*1,099
October	4,877	662	5,539
November	3,292	*802	2,490
December	*570	*891	*1,461
January, 1916	1,303	*1,213	6,091
February	16,430	*1,826	17,594
March	23,792	4,198	27,989
April	26,143	4,471	30,614
May	24,708	2,921	26,729
June	22,184	65	22,249

July	18,244	3,634	21,878
August	21,413	304	21,717
September	29,310	1,443	30,753
October	28,339	*2,012	26,327
November	24,241	*183	24,058
December	18,791	*252	18,539
January, 1917	19,563	*1,790	17,773
February	14,145	*1,612	13,103
March	14,125	2,591	16,716
April	18,821	4,709	23,530
May	5,313	*7,525	*2,212
Eleven months	212,905	*723	212,182

May 1917.

Immigrant aliens in	10,487
Non-immigrants in	5,535
Total aliens in	16,022

Emigrant aliens out	5,462
Non-emigrant aliens out	5,347
Total aliens out	10,709

Citizens in	5,776
Citizens out	13,301
Excess citizens out	7,525

Change in population:

Aliens	-5,343
Citizens	-7,525
Net change	-2,212

* Excess of departures.

Our Foreign Trade.

Value of merchandise imports, exports and favorable trade balance, calendar years.

	Imports.	Exports.	Balance.
1906	1,320,501,572	1,798,241,131	477,741,862
1907	1,423,169,820	1,925,426,205	502,256,385
1908	1,116,374,087	1,752,835,447	636,461,360
1909	1,475,320,724	1,728,198,645	252,877,921
1910	1,562,504,151	1,866,358,904	303,854,753
1911	1,532,359,160	2,092,526,746	560,167,586
1912	1,818,133,355	2,399,214,993	581,081,638
1913	1,792,596,480	2,848,018,292	691,421,812
1914	1,789,276,001	2,113,624,050	324,348,049
1915	1,778,596,695	3,554,670,847	1,776,074,152
1916	*2,391,654,335	*5,481,423,589	*3,089,769,254

1914—

July	150,677,291	154,138,941	75,538,344
Aug.	129,767,890	110,367,494	719,460,396
Sept.	136,710,611	156,051,333	16,341,722
Oct.	137,978,778	195,284,852	57,306,074
Nov.	126,467,062	205,878,333	79,411,271
Dec.	114,656,545	245,632,558	130,976,013

1915—

Jan.	122,148,317	267,879,313	145,731,996
Feb.	125,123,391	298,727,757	173,604,366
Mar.	158,022,016	296,501,852	138,479,836
Apr.	160,576,106	294,745,913	134,169,807
May	142,284,851	273,769,093	131,484,242
June	151,695,140	268,547,416	116,852,276
July	143,099,620	267,968,990	124,879,370
Aug.	141,830,202	261,025,230	119,195,028
Sept.	151,236,026	300,676,822	149,440,796
Oct.	149,172,729	336,452,069	186,979,289
Nov.	155,496,675	327,670,353	172,173,678
Dec.	171,832,505	359,306,492	187,473,987

1916—

Jan.	184,350,942	330,036,410	145,685,468
Feb.	193,935,117	402,991,118	209,056,001
Mar.	215,589,785	410,742,034	195,152,249
Apr.	218,236,397	398,568,532	180,332,135
May	229,188,957	474,803,637	245,614,680
June	245,795,438	464,784,318	218,988,880
July	182,722,938	445,472,000	262,749,062
Aug.	199,247,391	509,778,680	310,531,289
Sept.	164,038,614	515,007,408	350,968,794
Oct.	178,658,730	492,813,918	314,155,188
Nov.	176,988,305	516,976,359	339,988,054
Dec.	204,834,188	521,650,904	316,816,716

1917—

Jan.	241,707,282	*613,355,693	*371,648,411
Feb.	199,479,996	467,683,406	268,203,410
Mar.	270,218,139	553,988,339	283,770,100
Apr.	253,916,966	530,252,295	276,335,329
May	280,706,164	552,794,022	272,087,858
June	*307,000,000	576,000,000	269,000,000

* High record. † Balance unfavorable.

Copper in July

Uncertainty as to Future Conditions Causes Dulness and Inactivity Throughout July—Price to the Government Still Undetermined—Labor Situation Much Improved—Net Decline Here 3½c Per Pound; Abroad £5.

Suspense characterized the situation in the copper market during July, the industry being continually at sea as to nearby future conditions. The settlement of Government prices was still under advisement when the month closed but happily the serious labor strikes in the West which had paralyzed business were reported practically over. At Butte, the settlement was made upon a basis that appeared to be satisfactory to all concerned, the sliding wage scale being adopted, that advances wages to the men automatically, in proportion to the prices obtained for metal in the open market. In the Arizona districts settlements were not yet fully effected but were progressing favorably. Production during the month was seriously decreased wherever labor difficulties were in force.

With so many adverse influences working in combination it was not surprising that business was largely held in abeyance and the drop of 5c to 6c per pound to the lowest point, 25.75 to 26.75c July 24th, for spot Electrolytic, followed as a natural result. There was a recovery in the closing days due to a few small sales and many large inquiries that did not develop into sales, but which carried prices upward to 28.00 to 28.50c at the close of the month making the total decline 3.50c per pound. The decrease in exports for June to 28,198 tons was a greater fall from the average monthly rate than had been expected by many, although forecasted by the minds watching this phase more closely. The London market suffered a drop of £5, the first change in several months to £125 for spot Standard, £124 10s for future Standard and £137 for spot Electrolytic and £133 for future Electrolytic, a few days before the month closed.

Labor Troubles and the Government Price.

During the first week, the all important question, was in regard to the set-

tlement of the price to be paid by the Government for the 60,000,000 pounds purchase of copper reported late in June, at tentatively 25.00c per pound which had not yet received official confirmation. There were some inquiries in the market for copper based upon brass inquiries but all were held in abeyance awaiting information as to future conditions. The labor situation in the West continued ominous and the Government was compelled to take firm action in effecting settlement of the strikes which were proved to have been instigated by pro-German interference through the I. W. W. Before the close of the week the strike in Utah was settled but in other places Government agents were still working to secure terms of agreement between the agitators and the operators; the leaders of the I. W. W. were arrested. On the 6th, an inquiry for 2,500,000 pounds of Electrolytic copper came from a manufacturing concern which has taken an order from one of the Allies. In the absence of business prices declined fractionally from 31.50 to 31.75c for Electrolytic to 31.00 to 31.50c; prime Lake was still held at 30.50 to 31.50c; Casting copper was down from 29.25-29.75 to 29.00-25c.

First Half 1917 Exports Heavy—Production Shows Decrease.

In the second week attention was attracted to the heavy exports of copper for first half 1917 as well as to the curtailment in production estimated at 100,000,000 pounds which, however, it was pointed out, might be retrieved in large measure before the end of the year and it was confidently stated that there was an ample supply of copper to meet all demands that might be made in 1917. Domestic consumption for first half of the year has fallen behind the average, the decrease being estimated at 60,000,000 pounds, possibly more. Buying of copper was confined to small mandatory orders purchased

Lake Copper Prices.

Monthly average prices of Lake Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.89	14.76	13.89	24.10	29.83
Feb.	15.87½	14.98	14.72½	27.44	34.04½
Mar.	14.96	14.79	15.11	27.42	35.33
Apr.	15.55	14.68	17.43	28.91½	32.46
May	15.73	14.44	18.81	29.28½	31.90
June	15.98	14.13	19.92	27.44	31.35
July	14.77	13.73	19.42	25.81	29.79
Aug.	15.79	12.68	17.47	26.58	—
Sept.	16.72	12.43½	17.76	27.86	—
Oct.	16.81	11.66	17.92½	28.37½	—
Nov.	15.90	11.93	18.86	31.71	—
Dec.	14.82	13.16	20.37½	33.07½	—
Av.	15.70	13.61	17.64	28.17	—

Electrolytic Copper Prices.

Monthly average prices of Electrolytic Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.75½	14.45	13.71	24.10	30.26
Feb.	15.27	14.67	14.57	27.46	35.22
Mar.	14.92½	14.33½	14.96	27.44	35.74
Apr.	15.46	14.34	17.09	29.31	32.19
May	15.63	14.13	18.60	29.81	32.32
June	14.85	13.81	19.71	27.49½	32.57
July	14.57	13.49	19.98	25.60	28.90
Aug.	15.68	12.41½	17.22	27.36½	—
Sept.	16.55	12.08	17.70½	28.26	—
Oct.	16.54	11.40	17.86	28.64	—
Nov.	15.47	11.74	18.83	32.22½	—
Dec.	14.47	12.93	20.35	33.84	—
Av.	15.52	13.61½	17.47	28.46	—

Casting Copper Prices.

Monthly average prices of Casting Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.57	14.27½	13.52	23.06½	28.04½
Feb.	15.14	14.48	14.17	26.03	31.73½
Mar.	14.76	14.18	14.34	25.90	32.18
Apr.	15.39	14.18	16.48	27.16	29.24
May	15.45	14.00	17.41	27.37	30.11
June	14.72	13.65	18.74½	25.10	30.36
July	14.40½	13.34½	17.76½	23.61	27.59
Aug.	15.50	12.27	16.46	24.67	—
Sept.	16.37½	12.00	16.75	25.93	—
Oct.	16.33	11.29	17.32	27.17	—
Nov.	15.19	11.63	18.41	30.37½	—
Dec.	14.22	12.83½	19.73	31.74	—
Av.	15.23	13.18	16.76	26.51	—

Sheet Copper Price Changes.

The changes in the base price of sheet copper since April 13, 1916 are given below, with price of Lake copper on the same date.

	1916—	Sheet Copper.	Lake Copper.
April 13	35.50	39.25
April 26	36.50	39.75
May 9	37.50	39.00
August 1	35.50	25.50
August 19	36.00	27.00
September 27	37.00	28.25
November 14	40.00	31.75
November 20	41.00	33.75
December 5	42.00	34.00
1917—			
February 19	44.00	36.25
April 10	42.00	35.75
April 23	40.00	35.75
June 11	38.00	34.75
June 19	39.00	34.75
June 20	38.00	34.50
July 26	36.00	29.00

Waterbury Copper Averages.

	1913.	1914.	1915.	1916.	1917.
Jan.	17.00	14.75	14.12½	24.75	30.25
Feb.	15.50	15.12½	15.25	27.75	35.25
Mar.	15.12½	15.00	15.75	28.00	35.50
Apr.	15.75	14.87½	18.50	29.00	32.75
May	15.87½	14.75	22.50	29.87	32.00
June	15.37½	14.37½	22.50	28.75	32.50
July	14.75	14.12½	22.25	27.25	28.87½
Aug.	15.62½	13.00	19.50	27.00	—
Sept.	16.87½	12.87½	18.50	28.00	—
Oct.	16.87½	12.25	18.25	28.87	—
Nov.	16.25	12.25	19.37	30.25	—
Dec.	15.00	13.50	20.75	34.25	—
Av.	15.83	13.91	18.94	28.85½	—

Exports of Copper From the United States.

In tons of 2,240 lbs.

	1914.	1915.	1916.	1917.
January	36,018	26,193	24,667	51,222
February	34,634	15,783	20,648	32,265
March	46,504	30,148	26,321	51,278
April	35,979	18,738	21,954	49,536
May	32,977	28,889	16,002	49,245
June	35,182	16,976	39,597	38,198
July	34,145	17,708	35,066	—
August	16,509	17,551	32,190	—
September	19,402	14,877	29,867	—
October	23,514	24,087	33,224	—
November	24,999	23,168	22,598	—
December	22,166	42,426	26,486	—
Totals	369,229	276,344	327,310	—

at concessions from the nominal quotations. Dulness reigned pending the delay at Washington in the adjustment of prices. The strike situation was gradually improving by the end of the first fortnight but the suggestion by the President that the price to the public should be the same as the price to the Government had an adverse effect causing apprehension in regard to the future. The authoritative announcement that the Government would pay 5% of 25c per lb. leaving remaining 25c or 61½¢ per lb. to be adjusted when productive costs have been ascertained by Federal Trade Commission had a further depressing effect and business came to a standstill.

Trade Marking Time.

In the second fortnight the waiting attitude of the trade continued, the uncertainty and lack of definite information from Washington affecting all lines while the nominal quotations gradually receded. Some sales by large producers were reported at 25.00c for first quarter 1918, but the market generally was unsettled and weak. Consumers later placed a few orders for September delivery at 26.25c and a few days after, resale lots of copper were being pressed for sale. On the 24th, the lowest quotations of the month were made: prompt and July positions were: Lake 28.00 to 29.00c; Electrolytic 25.75 to 26.25c; Casting 25.00 to 25.50c. August Electrolytic 25.25 to 25.75c; fourth quarter 23.50 to 24.50c. Small sales July Electrolytic were reported at the same time at 26.00c. With the Government price still undetermined the general feeling expressed was that 20c seemed more likely than 25.00c per pound.

Miners Return to Work— Market Firmer.

The welcome announcement that the Butte miners were about to return to

work came late in the month, being immediately followed by a slightly firmer tone and in the closing days small sales of July Electrolytic were made at an advance of ½¢ per pound to 26.50c. Then followed inquiries from consumers for earload lots for delivery over the balance of the year. Prompt and July Lake and Casting copper were reported to be very scarce and the market seemed steadier although some irregularities still existed. Prices advanced to: Lake 28.00 to 29.00c; casting 26.00 to 26.50c; prompt Electrolytic 28.00 to 28.50c. September 27.75 to 28.25c, October 27.25 to 27.75c and fourth quarter 26.50 to 27.50c.

Copper Prices in July.

Day.	— New York —			London.		
	Lake.	Electro.	Casting.	Standard.	£	s d
2	31.00	31.62	29.50	130	0	0
3	31.00	31.62	29.50	130	0	0
4	31.00	31.62	29.50	130	0	0
5	31.00	31.62	29.50	130	0	0
6	31.00	31.25	29.12	130	0	0
9	31.00	31.00	29.12	130	0	0
10	31.00	31.00	29.12	130	0	0
11	31.00	30.50	29.12	130	0	0
12	31.00	30.50	29.12	130	0	0
13	29.75	29.25	28.50	130	0	0
16	29.50	29.00	28.00	130	0	0
17	28.50	28.00	27.50	130	0	0
18	28.50	27.50	26.50	130	0	0
19	28.50	27.00	26.25	130	0	0
20	28.50	26.75	26.25	130	0	0
23	28.50	26.50	25.25	125	0	0
24	28.50	26.00	25.25	125	0	0
25	29.00	26.50	25.75	125	0	0
26	29.00	26.75	26.00	125	0	0
27	29.75	28.00	26.25	125	0	0
30	29.75	28.25	26.75	125	0	0
31	29.75	28.25	27.25	125	0	0
High ..	31.50	31.75	29.75	130	0	0
Low ..	28.00	25.75	25.00	125	0	0
Avgc.	29.79	28.90	27.59	128	8	2

Tin in July.

Recommendations of Tin Committee to Federal Authorities Not Yet Acted Upon—Cheapness of Grades Other Than Straits A Feature—Only Slight Improvement in Receipt of Cables—Market Closes Firm With Net Advance of $1\frac{1}{4}$ c Per Pound.

While delayed cables continued to depress the tin market in July, affecting transactions adversely to some extent, there was an improvement in this respect over the preceding month. The June statistics, it was pointed out, while interesting were misleading as to deliveries which were given at 6,398 tons including Pacific coast arrivals of 2,798 tons. Since all arrivals at Pacific ports do not now, as formerly, go directly to consumers, some tin being sent on to New York, because of the greater safety in shipping this way, the American Metal Market revised the estimate to about 5,000 tons. This revision affects the visible supply, also, by increasing it 1,300 tons, which makes it about the same as at the corresponding period in 1916. A total decrease of 1,882 tons in deliveries for first half 1917 was noted—the combined London and Holland decrease was 372 tons. Straits shipments were 189 tons less and Australian shipments were 1,321 tons under the first half 1916 deliveries.

Early in the month the Tin Committee submitted its report to the Government with recommendation of improvements, but, because of continued friction at Washington in regard to other metals the tin matter was not acted upon by the Federal authorities when the month closed. Increasing supplies of other kinds of tin than Straits, at prices ranging from 2c to 8c per pound under Straits continued to be a feature throughout the month. Spot Straits registered a net advance of 1.5c from 62.00c to 63.75c per pound.

At the beginning of July, the prompt arrival of the official foreign cable was gratifying after the exasperating delays of the days previous which had held trade completely in abeyance: spot Standard £243 10s, futures £237; spot Straits £244 and Singapore c.i.f. London, £239, all showing declines from the previous last cable of June 28, £1 for spot Standard and Straits, £4

for future Standard, £3 for the East Indies. The New York market was down fractionally to 62.00c but business was at a standstill until after the National holiday, when a better inquiry from consumers developed, and with an advance abroad of £3, spot advanced to 62.50c per pound. Owing to the large supplies of Banca and Chinese tin, unusual concessions were offered on these brands, the latter selling 8c under Straits by the close of the first week.

Market Firm With Good Demand.

The second week opened with good demand and advancing prices both at home and abroad, tin being the only metal showing any strength, in the entire market. The Tin Committee after energetic work submitted its report to

Tin Prices in July.

Day	New York.	London.		
	Cents.	£	s	d
2	62.00	241	10	0
3	62.00	242	15	0
4	62.00	242	0	0
5	62.00	245	0	0
6	62.50	245	10	0
9	62.75	246	0	0
10	63.00	246	10	0
11	63.00	245	0	0
12	62.75	244	0	0
13	62.00	247	0	0
16	62.00	247	10	0
17	62.50	249	0	0
18	62.62	249	10	0
19	62.50	249	0	0
20	62.62	240	0	0
23	62.50	249	0	0
24	62.25	248	10	0
25	62.37	249	10	0
26	62.62	241	10	0
27	62.87	244	5	0
30	63.00	246	0	0
31	63.75	247	0	0
High	63.75	247	0	0
Low	62.00	237	0	0
Avg.	62.69	242	2	9

Visible Supplies.

Visible supplies of tin at end of each month:

	1913.	1914.	1915.	1916.	1917.
Jan.	13,971	16,244	13,901	17,041	18,169
Feb.	12,304	17,308	14,548	16,511	19,627
Mar.	11,132	16,989	15,467	18,782	20,307
April	9,822	15,447	15,785	19,739	18,047
May	13,710	17,862	14,646	19,614	19,404
June	11,101	16,027	15,927	19,363	18,059
July	12,063	14,167	16,084	18,404	
Aug.	11,261	14,452	15,127	18,042	
Sept.	12,943	14,613	15,191	16,192	
Oct.	11,857	10,894	13,154	17,415	
Nov.	14,470	11,483	16,451	21,186	
Dec.	13,893	13,906	16,216	20,737	
Av'ge	12,377	14,907	15,208	18,585	

Shipments From the Straits.

Monthly shipments of tin from the Straits Settlements to Europe and United States:

	1913.	1914.	1915.	1916.	1917.
Jan.	6,050	5,290	5,200	6,095	4,815
Feb.	4,660	6,520	5,584	6,250	6,255
Mar.	4,810	4,120	4,970	5,170	5,134
April	4,400	4,930	3,270	4,685	4,393
May	6,160	6,900	6,759	3,965	6,866
June	4,280	5,870	6,665	6,210	4,723
July	4,770	4,975	5,606	5,410	
Aug.	6,030	3,315	4,712	4,526	
Sept.	5,160	4,974	5,296	3,270	
Oct.	5,020	4,610	4,441	5,868	
Nov.	5,560	5,155	6,713	5,380	
Dec.	5,110	6,435	5,301	4,758	
Total	62,550	63,093	66,517	61,587	
Av'ge.	5,213	5,258	5,543	5,132	

Consumption In the U. S.

Monthly deliveries of tin in the United States exclusive of Pacific Coast:

	1913.	1914.	1915.	1916.*	1917.*
Jan.	3,700	3,600	2,300	4,452	7,177
Feb.	3,500	3,300	3,375	6,388	3,930
Mar.	5,900	4,450	3,200	4,726	4,804
April	3,450	4,300	3,200	4,202	4,380
May	3,450	3,800	5,600	5,455	5,749
June	3,800	3,650	3,900	6,398	6,398
July	3,000	3,000	5,300	4,432	
Aug.	3,600	2,900	4,500	4,335	
Sept.	3,100	3,600	4,300	4,025	
Oct.	3,700	3,700	4,900	4,556	
Nov.	2,800	2,600	2,975	3,165	
Dec.	3,100	1,900	5,200	4,082	
Total	43,900	41,700	48,750	56,216	
Av'ge.	3,658	3,475	4,062	4,685	

Tin Statistics.

Compiled by New York Metal Exchange
(Tons of 2,240 lbs.)

	May 1917.	April 1917.	May 1916.
To Gt. Britain ..	3,522	1,470	1,470
" Continent ..	1,110	1,178	400
" U. S.	2,234	1,745	2,145
Total from Straits	6,866	4,393	4,015
Total from Australia			
Consumption			
London deliveries	1,801	1,634	1,775
Holland deliveries	82	83	84
U. S.	5,749	4,380	5,745
Total	7,632	6,097	7,604
Stocks at close of month			
In London—			
Straits, Australia	3,404	3,637	3,402
Other kinds	359	401	1,802
In Holland			
In U. S.	4,402	1,707	1,408
Total	8,165	5,745	6,612
Afloat close of month			
London	5,702	4,170	4,170
Banca & Billiton.	1,641	3,230	4,498
U. S.	3,896	4,902	4,807
Total	11,239	12,302	13,475
Total visible supply	May 31, 1917. 19,404	April 30, 1917. 18,047	May 31, 1916. 19,014

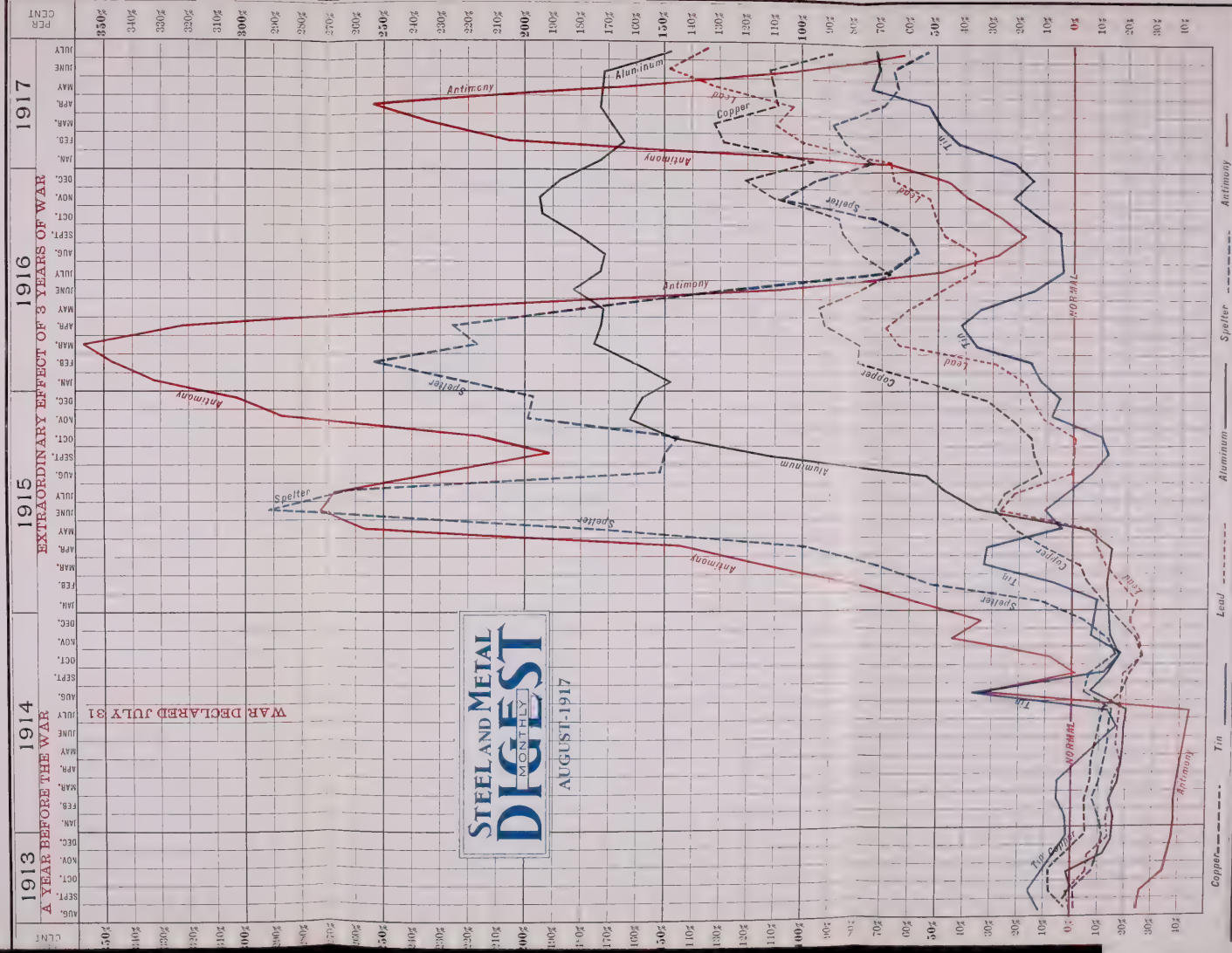
Straits Tin Prices In New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	50.45	37.74	34.30	41.88	44.10
Feb.	48.73	39.93	37.32	42.63	51.87
Mar.	46.88	38.08	49.93½	50.42	54.00
Apr.	49.12	36.10	47.98	51.75	55.01
May	49.14	33.30	38.78	49.15	63.20
June	44.93	30.65	40.37	42.17	62.00
July	40.39	31.75	37.50	38.46	
Aug.	41.72	50.59½	43.39	38.54	
Sept.	42.47	32.79	33.13	38.70½	
Oct.	40.50	30.39½	33.08	41.16	
Nov.	39.81	33.50	39.37½	44.17	
Dec.	37.64	33.60	38.75	42.66½	
Year	44.32	35.70	38.66	43.48	

Striking Effect of 3 Years of War on Metal Prices

COPPER - TIN - LEAD - SPELTER - ANTIMONY - ALUMINUM

Monthly price fluctuations of copper, tin, lead, spelter, antimony and aluminum since one year before the War plotted on a percentage basis of above and below par (zero). The par values of all the metals except aluminum represent the averages of the prices for the ten years ending 1913. The par value of aluminum is fixed at 22c which is about the average of five years preceding the War.



the Government with suggestions as to improvements. The scarcity of spot Straits began to attract attention and prices advanced to 63.00c but with fresh arrivals of Banca, which by analysis is as pure as Straits tin, selling for 2c to 3c per pound less, and No. 1 Chinese 99% pure selling 7c to 8c lower than Straits tin, there was a recession for Straits to 62.00c by the close of the first fortnight.

With difficulties increasing at Washington shown in the request of Secretary Redfield for the resignation of Dr. Pratt of the Bureau of Foreign and Domestic Commerce, the prospect of an early settlement of regulations seemed very remote. Unusual activity in future deliveries was noted during many days about the middle of the month with such sales reported at 61.50c ex steamers afloat from London, at 58.00c due to arrive in October while September shipments from the Straits could be bought at 55.50c. A waiting attitude developed with spot Straits becoming

scarcer, the market remaining firm and then advancing to 62.62½c by the 20th for wholesale delivery. As the month progressed arrivals of tin continued without any reported loss but the spot situation did not improve; trading was at a standstill followed by a fractional decline by the 24th.

In the closing week with renewed activity and firmer prices abroad and with important consumers buying far-off deliveries here, and a better demand in other positions, an upward tendency developed that carried prices for spot to 63.75c on July 31st, with an advance of 1c per pound on nearly all positions. The rise for the month was from 62c at the beginning to 63.75c at the close.

The foreign market closed at £247 for spot Standard; £243 for futures; £248 for spot Straits and for East Indies £246 c.i.f. London.

July deliveries at Atlantic ports were 3,000 tons and Pacific arrivals were not yet announced.

Spelter in July.

Government Announces Purchase of 8,250,000 Pounds of Grade "A" and 15,000,000 Pounds of Grade "B" at 13.50c and 13.00c Respectively—

Zinc Ores Off \$5—General Conditions Very Unsatisfactory—

Market Closes With Net Decline of ½c Per Pound.

The spelter story in July is a record of lower prices for both ores and metal; an easier tendency all around with a considerable falling off in the volume of business transacted, especially in regard to the consuming demand. The lowest quotation was 8.25c East St. Louis, 8.42½c New York. The net decline was only ½c per pound because of the recovery to 8.50c East St. Louis and 8.67½c New York for prompt August and September shipments, fourth quarter being held at 8.50 to 8.62½c East St. Louis, 8.67½c to 8.80c New York. Zinc ores dropped from \$70 to \$80 per ton to \$60 to \$67.50 on July 13th, after which there was a recovery to \$65 to \$75 on July 16th, with no further change. Exports from all ports were 10,629 tons.

The foreign market was unchanged at £54 and £50 for spot and futures,

respectively. Attention was called by the Metal Bulletin of London to the gross errors in the New York Metal Exchange spelter quotations, tracing as far back as January 18th, and continuing until April 21st, when the discrepancies which had ranged between £4 and £11 ceased. An explanation was asked for and the Secretary of the Exchange is understood to be making an investigation.

Market Prices Below Production Costs—Some Furnaces Shut Down.

The month opened with reports from the West that smelters would take advantage of unfavorable trade conditions to overhaul furnaces, 9,000c for spelter being below cost of production in some instances. There was only a very light demand for prompt spelter until after the National holiday, July

4th, when consumers made inquiries in an effort to shade the 9.00c basis. At the close of the first week prices were unchanged from the June closing in a dull but steady market. Brass special was firm at 9.50 to 9.62½c.

Market Weak--General Conditions Unimproved.

In the second week, with no news from Washington confirming the reported Government buying, and with general conditions unimproved, prices declined fractionally, brass special sharing in the downward tendency. It was pointed out that for three months the consuming demand had been falling off; the Government's order for 225 tons Grade "C"—prime Western—in May, was too small to affect the market and that exports were also materially diminished. The one-price-for-all idea was as discouraging to the spelter industry as to all other metals trade and for the time being helped in the downward tendency which had proceeded to 8.70c New York and 8.50c East St. Louis by July 17th, after which, in the absence of demand, aside from small brass special buying, the market became unsettled and weak. By the 19th, the bottom was reached at 8.42½c New York, 8.25c East St. Louis. Dealers now came into the market and their trading helped to steady the market but consumers remained aloof, claiming that unknown Government needs, made it impossible to gauge their requirements. A change of sentiment soon developed which brought about a quick recovery of ¼s to ¼c, from the extreme low price.

Slight Recovery Sets In—Government's Purchase Announced.

By the 23rd, quite a good business had been transacted with consumers who bought at 8.37½c East St. Louis for prompt and August shipments while 8.50c was paid for later deliveries and quotations advanced to 8.55 to 8.67½c New York. It was hoped that the report of Government negotiations for a large tonnage at 8.75c per pound would prove true. Business was more

active but prices were cut by some sellers who had large supplies.

On the 26th, the long delayed public official confirmation of the purchase made by the Government of 8,250,000 pounds, Grade "A" at 13.50c per pound and 15,000,000 pounds Grade "B" at 13.00c with freight allowed to New York, was announced and at the same time there was a denial of any purchase of Grade "C"—prime Western being included in this buying.

In the closing days the market was quiet, dealers buying, and brass special was in better demand. On the 31st, inquiries from consumers were encouraging, sales being made f.o.b. East St. Louis basis at 8.50c for prompt, August, September and October but October alone, could not be purchased at this price. Quotations were 8.67½c for August and September with fourth quarter held at 8.67½ to 8.80c New York.

Spelter Prices in July.

Day.	New York. Cents.	St. Louis. Cents.	London. £ s d
1	9.17½	9.00	54 0 0
3	9.17½	9.00	54 0 0
4	9.17½	9.00	54 0 0
5	9.17½	9.00	54 0 0
6	9.17½	9.00	54 0 0
9	9.11½	8.93½	54 0 0
10	9.05	8.87½	54 0 0
11	8.98¾	8.81½	54 0 0
12	8.92½	8.75	54 0 0
13	8.86	8.68¾	54 0 0
16	8.80	8.62½	54 0 0
17	8.70	8.50	54 0 0
18	8.61½	8.43¾	54 0 0
19	8.48¾	8.31½	54 0 0
20	8.55	8.37½	54 0 0
23	8.61½	8.43¾	54 0 0
24	8.61½	8.43¾	54 0 0
25	8.61½	8.43¾	54 0 0
26	8.61½	8.43¾	54 0 0
27	8.61½	8.43¾	54 0 0
30	8.61½	8.43¾	54 0 0
31	8.67	8.50	54 0 0
High	9.17	9.00	54 0 0
Low	8.42½	8.25	54 0 0
Avg.	8.82	8.64	54 0 0

Spelter Prices in St. Louis.

Extreme price fluctuations of Prime Western Spelter, East St. Louis delivery, by months and years.

	1914			1915			1916			1917		
	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.
Jan.	5.25	5.10	5.14	7.62½	5.55	6.33	19.25	17.12½	18.01	10.87½	9.00	9.82
Feb.	5.35	5.20	5.27	10.00	7.65	8.62	21.00	18.50	19.92	10.75	9.37½	10.32
Mar.	5.22½	5.12½	5.15	11.00	8.87½	9.80	20.62½	16.25	17.91½	10.87½	10.37½	10.65
April	5.12½	4.85	5.03	14.00	9.25	11.22	19.25	17.50	18.44	10.50	8.75	9.55
May	5.00	4.90	4.96	21.00	13.00	15.52½	17.75	13.12½	15.75½	9.50	9.12½	9.30½
June	4.97½	4.82½	4.93	27.00	17.50	22.14	13.87½	10.87	12.62	9.50	9.00	9.28
July	4.95	4.80	4.84	22.75	17.75	20.53	9.75	8.20	8.92	9.00	8.27	8.64
Aug.	6.00	4.70	5.45	18.00	10.75	14.19	11.00	8.62½	9.52½			
Sept.	5.85	4.95	5.33	15.25	13.37½	14.10½	9.62½	8.50	9.06			
Oct.	5.00	4.60	4.81	14.62½	13.25	13.89	10.37½	9.25	9.83			
Nov.	5.20	4.80	4.97	19.00	14.37½	16.87½	13.12½	10.25	11.75			
Dec.	5.65	5.20	5.49	18.00	14.75	16.72	13.12½	9.62½	11.11			
Year	6.00	4.60	5.11½	27.00	5.55	14.16	21.00	8.30	13.57	10.87½	*8.25	10.65

* Six months.

Spelter Prices in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	7.23	5.33	6.52	18.18½	9.97
Feb.	6.49	5.46	8.86½	20.09	10.49
Mar.	6.29	5.35	10.12½	18.10	10.82½
April	5.79	5.22	11.51	18.61½	9.73
May	5.51	5.16	15.82½	15.93	9.18
June	5.23	5.12	22.62½	12.80	9.15
July	5.11	5.03	20.80	9.70	8.89
Aug.	5.80	5.63	14.45	9.10	
Sept.	5.83	5.52	14.49	9.24½	
Oct.	5.47	4.99½	14.07	10.01	
Nov.	5.34	5.15	17.04	11.92½	
Dec.	5.22	5.67	16.91	11.28½	
Av.	5.80	5.30	14.44	13.75	

Waterbury Spelter Averages.

	1913.	1914.	1915.	1916.	1917.
Jan.	7.56	5.54	6.55	22.25	13.05
Feb.	6.81	5.70	11.85	22.70	13.80
Mar.	6.56	5.59	12.15	23.15	13.45
April	6.08	5.50	13.85	23.20	11.85
May	5.77	5.38	20.55	21.20	11.05
June	5.50	5.35	25.60	17.10	10.85
July	5.61	5.26	21.90	15.20	10.55
Aug.	5.99	5.66	19.30	13.60	
Sept.	6.13	5.91	17.85	13.70	
Oct.	5.74	5.23	16.85	12.95	
Nov.	5.60	5.38	19.36	14.10	
Dec.	5.44	5.90	21.15	13.20	
Average	6.06½	5.53½	17.50	17.72	

Sheet Zinc Price Changes.

The following table gives the changes in the base price of sheet zinc since June 27, 1916, together with the price of spelter ruling on the same day.

1916—	Sheet Zinc.	Spelter St. Louis.
June 27	18.00	11.37½
July 6	17.00	9.37½
July 11	15.00	8.62½
October 26	16.00	10.12½
November 10	17.00	11.12½
November 17	18.00	12.00
November 20	19.00	12.12½
November 24	20.00	12.87½
November 24	21.00	12.87½
April 25	20.00	8.87½
April 26	19.00	9.00

Exports of Domestic Spelter and Sheets—Short Tons.

	1916		1917	
	Tons.	Value.	Tons.	Value.
Jan.	10,183	\$3,601,970	15,351	\$4,455,110
Feb.	10,328	3,638,003	15,531	4,933,947
Mar.	8,171	2,902,172	17,408	4,954,329
April	9,133	3,461,914	12,675	3,374,809
May	8,583	3,093,620		
June	11,309	4,036,656		
July	12,708	4,230,805		
Aug.	18,661	5,549,581		
Sept.	19,255	5,150,808		
Oct.	19,994	5,758,357		
Nov.	18,991	5,291,493		
Dec.	15,652	4,774,158		
Total	163,268	\$51,489,837		

Lead in July.

Labor Troubles Coupled With President's Appeal of "One-Price-For-All" Have Depressing Effect—Government Buys One-Sixth of Coeur de Alene District's July Output (2,000 Tons) at 8c Per Pound; August Requirements Understood to be 8,000 Tons—Lead Ores Off \$10—Net Decline Only 1½c Per Pound.

The lead market in July, after several months of activity and profitable prices, suffered for a time from the general weakness and dullness prevailing in other metals. This was due not only to the labor difficulties in the West at mines and smelters, but to the disturbed business outlook of the country over the one-price-alike-possibility for Government and public buying. Lead ores declined \$10 to \$110, in two drops, each of \$5 per ton. Prices in the outside market at the lowest point were 1c to 1½c per pound below the official base of the "Trust" which remained unchanged at 11.00c when the month closed, not having been affected by the adverse influences. A gradual recovery in the outside market after the 23rd, occurred, making the net decline only 1½c per pound.

Government needs for August were understood to be 7,000 to 8,000 tons and seven producers in the Coeur de Alene district agreed to sell one-sixth of their July output to the United States at 8c per pound.

July opened without any change in lead market except the weakening of ore which had dropped to \$120 per ton. With the understanding that the United States will pay 8c per pound for one-sixth of the July production of seven companies in the Coeur de Alene district a matter of 2,000 tons, there was a desire to know what price our Allies will pay for lead munition requirements to be exported into Canada. The first week closed dull and prices were down to 11.12½c New York, and 11c St. Louis.

Lead Sells Under Trust Price for First Time In Months.

In the second week, for the first time in many months, lead in the outside market was offered under the official base of the American Smelting & Refining Company. At this time, the pros-

pect of large production in the latter half of 1917, was said to be influencing the market and keeping consumers in different, the expectation being for a further decline, which was soon realized. The market came to a standstill, and with offerings freely made in large amounts, prices declined to the lowest point of the month, 9.75c East St. Louis and New York, on July 19th, by which time the one-price-alike-possibility for Government and public was exerting an adverse effect upon the trade mind. Second hand offerings became numerous and the "Trust" price was 1c to 1½c higher than the outside market—

Lead Prices in July.

Day.	New York*	St. Louis.	London.	
	Cents.	Cents.	£	s d
2	11.45	11.25	30	10 0
3	11.45	11.25	30	10 0
4			30	10 0
5	11.50	11.12	30	10 0
6	11.42	11.00	30	10 0
8	11.42	11.00	30	10 0
10	11.00	10.87	30	10 0
11	11.00	10.87	30	10 0
12	10.95	10.87	30	10 0
13	10.87	10.87	30	10 0
16	10.50	10.62	30	10 0
17	10.50	10.62	30	10 0
18	10.25	10.25	30	10 0
19	10.00	10.00	30	10 0
20	10.00	9.87	30	10 0
23	10.12	10.12	30	10 0
24	10.25	10.25	30	10 0
25	10.37	10.37	30	10 0
26	10.50	10.50	30	10 0
27	10.75	10.68½	30	10 0
30	10.75	10.68½	30	10 0
31	10.87	10.75	30	10 0
High	11.50	11.47	30	10 0
Low	9.75	9.75	30	10 0
Avg.	10.71	10.67	30	10 0

* Canadian Market.

reversing the prices of only one month previous.

Recovery in Prices Marks Close of Month.

A few days later, sentiment grew stronger, production was threatened by the labor strikes and the tendency was towards recovery, which, with few offerings and an awakening demand, registered an advance to 10.00 to 10.25c on the 23rd, both at New York and St. Louis, with August 9.50 to 10.00c. About this time it was known that United States August requirements were not over 8,000 tons and probably less. The labor troubles in the West were known to have reduced the output of two large producers 50% and the "Trust", with some other producers, held firmly to their 11c basis, while the

outside market continued its recovery fractionally, day by day. Sales were on a very limited scale, until July 26th, when a few carloads for prompt delivery were sold at 10.50c New York but offers to sell August shipment at the same price were not accepted.

The continued refusal or inability of producers to sell under 11c per pound, in view of the continued labor difficulties which were not improved in Missouri, supported the market which grew stronger although lead ore declined \$10 per ton to \$110 on the 30th. Lead offerings were now only in very limited amounts and on the last day, prices recovered to 10.75c to 11.00c New York, 10.62½c to 10.87½c St. Louis, while August position was held at 10.75c at both places.

Review of Joplin Zinc and Lead Ore Markets For July.

The Joplin ore market showed a falling off both for zinc and lead during the month of July. Zinc ranged approximately \$5 per ton lower throughout the month than the previous one, the base range being \$65 to \$75 for blende ore. The same degree of weakness was also evident with calamine ores.

The average price for all grades of blende ores during the month was \$69.77. The average for calamine ores \$38.71. It will be noted that the averages were slightly below the average base price. Shipments for the month showed a decline also. The total number of tons of zinc ores shipped amounted to 33,104 tons as against 50,000 tons the previous month. The average per week was 8,276 tons. Calamine ore shipments was 2,384 tons, or an average of 596 for an average per week. This falling off in tonnage shipments is due partially to lower prices for ore and partially to an actual decrease in output occasioned by the gradual shutting down of sheet ground mines which have been forced to close on account of inability to produce at a profit. The effect upon surplus stocks of zinc has been an increase of 2,600 tons over the surplus at the beginning of the month.

The month opened with a surplus stock of 14,875 tons and increased to 17,485. This compares with 26,650 tons, the same month of last year. It is apparent, therefore, that from a statistical standpoint local surplus figures show a better position than last year, despite the low ore prices and the exceedingly high prices having to be paid for supplies.

Lead ore prices showed a gradual decrease throughout the month, descending from \$125 to \$115 at the end of the month. This decrease in price also affected shipments and caused a slight increase in surplus stocks, the greatest difference however came in the production which is being decreased in the sheet ground field. The month closed with a surplus stock of 2,356 tons as against 1,958 at the beginning of the month, and 2,500 tons as compared with last year. The average weekly shipment amounted to 1,258 tons with an average price of \$114.63.

Labor conditions have been considerably ameliorated since last month. This was due in a large measure to returning labor from the harvest field, and to the release of miners from plants that have shut down in the sheet ground

field. Mine operators are considerably worried however, over the possibility of a wage adjustment. They realize they cannot continue to pay the present wage scale and avoid bankruptcy and they also realize that it would not only be unfair, but would be impossible also to decrease the wage scale in the face of high living conditions

faced by labor. The situation is extremely serious, far more so than is generally understood among the general public. The operators have been making many efforts to secure Government assistance, but so far have not been able to bring anything worth while about.

Antimony in July.

Oversupply and Dulness Throughout July Cause A Net Decline of 2¼c Per Pound.

Like all other metals in July, the antimony industry suffered under the generally adverse business conditions existing. The market was lifeless and prices steadily declined from 18.00c at the beginning of the month to the lowest point, 14.75c on July 26th, after which there was a recovery to 15.12½c, making the net recession for the month 2¾c per pound.

July opened with an overstocked market and an entire absence of consuming demand but with expectations of Government buying in the near future, which, before the close of the first week was believed to have been done privately if at all, there having been no official confirmation made public. In the absence of any demand, pressure was made by overstocked sellers which became responsible for the steady decline in prices to 15.50c to 16.00c for prompt and July, 15.25 to 15.75c for August and September, by the close of the first fortnight.

The market in the Orient was also down, with offerings of July and August shipments at 14.75c in bond. By July 19th, prices were nominally 15.00c

for all positions with August ranging 14.75 to 15.00c. Following this, offerings from China and Japan were withdrawn because of the low quotations here, it being stated that their present production costs prevented them from being able to meet the prices named on resale lots which were now being freely offered in this market. A few days later, on two successive days, 25 tons spot antimony were sold under the hammer at the New York Metal Exchange for 13.37½c in bond, this being equal to 14.62½c duty paid, New York.

By the 25th, it became evident in the smaller offerings, that stocks were somewhat reduced and the following day a sale of 25 tons spot was made at 14.75c, September going at 15.00c, a premium of ¼c over prompt. On the 30th, a few small sales were made at 15.00c with September delivery for 15.25c, the latter being made on speculative account, it was believed. The month closed with conditions practically unchanged, except the slight reduction in stocks, and a few 5 ton lots were sold to consumers at 15.12½c, quotations being 15.00 to 15.25c per pound.

Aluminum in July.

Government Refuses Aluminum Company of America's Offer of 27.50c Per Pound On All Government Requirements — Metal Placed Under Government Control—Market Very Dull With No Consuming Demand—Net Decline for Month 6c to 9c on Various Grades.

In the entire absence of consuming demand in the aluminum market during July, with prices steadily declining in a total recession of 6c to 9c on the various kinds, the interesting features were first, the refusal of Secretary Daniels to accept the offer of the Aluminum Company of America to supply all Government requirements at 27.50c per pound, and following this, a report that the amount of aluminum required by the necessities of the war could not be furnished from bauxite, the present source of supply. A Chicago chemist was said to have submitted to the Society of Industrial Engineers, who were to take up the matter with the Council of National Defense, a theory for obtaining aluminum from kaolin China clay—which exists in practically inexhaustible supply in this country—the largest deposits being in Illinois—according to Dr. Weber, the experimental inventor introducing the matter.

The July market opened at the same quotations as the June closing prices, the feature of the first week being the rejection by the Government, through Secretary Daniels, of the offer to supply all needs at the average price, plus 2c, for the metal during ten years past.

At the suggestion of Senator Reed the metal was placed under Government control by an amendment to the Food Bill which was accepted. With practically no demand by the end of the first week, No. 1 virgin and 98-99% pure remelted, declined 1c, 12 alloy remelted remaining unchanged. With increasing dullness in the next week, a further recession on all kinds was noted, to 54.00 to 56.00c for No. 1 virgin; to 53.00 to 54.00c for 98-99% remelted and to 40.00 to 42.00c for No. 12 alloy by the beginning of the second fortnight.

With offerings being freely made at concessions from these figures and no acceptances, home consumers being well stocked and with exports stopped, it was natural that the downward tendency should continue. On July 24th quotations were 51.00 to 53.00c for No. 1 virgin, 49.00 to 51.00c for 98-99% remelted and 37.00 to 39.00c for No. 12 alloy. In the closing week, the decline proceeded to 48.00 to 50.00c for No. 1 virgin, 46.00 to 48.00c for 98-99% remelted and 36.00 to 38.00c for No. 12 alloy, the total recession being 9c on No. 1 virgin and 98-99% remelted and 6c on No. 12 alloy remelted.

Aluminum and Silver Prices.

New York				
Aluminum.		Silver —		
	1916.	1917.	1916.	1917.
Jan. ...	54.33	60.00	56.77½	75.63
Feb. ...	57.50	58.05½	56.75½	77.57
Mar. ...	60.25	59.23	57.93½	73.86
April ...	60.00	60.00	64.41½	73.88½
May ...	60.00	60.00	74.27	74.74½
June ...	62.09	59.85	65.02½	76.93½
July ...	60.15	54.33	62.94	79.01
Aug. ...	59.48		66.08	
Sept. ...	61.90		68.51½	
Oct. ...	64.55		67.85½	
Nov. ...	64.80		71.60	
Dec. ...	63.40		75.76½	
Average	60.73		65.66	

Lead Prices in New York.

Based on American Smelting & Refining Company's quotations on 50 ton lots.

	1913.	1914.	1915.	1916.	1917.
Jan. 5.35	4.11	3.74	5.94	7.81	
Feb. 4.35	4.06	3.82	6.23	8.34	
Mar. 4.35	3.97	4.03	6.83	8.98	
April 4.40	3.82	4.20	7.50	9.00	
May 4.36	3.90	4.22½	7.50	9.71	
June 4.35	3.90	5.87½	7.02	10.76	
July 4.35	3.90	5.74	6.54	11.00	
Aug. 4.63	3.90	4.75	6.25		
Sept. 4.75	3.86	4.62	6.75		
Oct. 4.45	3.54	4.59½	7.00		
Nov. 4.34	3.68	5.15	7.00		
Dec. 4.06	3.80	5.34½	7.44		
Av. 4.40	3.87	4.67½	6.82		

Lead Prices in St. Louis.

Extreme fluctuations of Soft Missouri Lead in St. Louis.

— 1914 —			— 1915 —			— 1916 —			— 1917 —		
High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.
Jan. 4.10	3.95	3.99½	3.65	3.50	3.57	6.00	5.45	5.80	8.25	7.30	7.58
Feb. 4.10	3.85	3.95	3.80	3.62½	3.72	6.37½	6.00	6.17	10.00	8.00	9.04
Mar. 3.87½	3.65	3.83½	4.12½	3.82½	3.98	8.25	6.40	7.46	10.00	9.25	9.53
April 3.80	3.65	3.70	4.15	4.07½	4.11	8.12½	7.32½	7.67	9.75	9.00	9.36
May 3.82½	3.77½	3.81	4.45	4.10	4.16	7.45	7.10	7.28	11.50	9.75	10.52
June 3.82½	3.77½	3.80	7.50	4.80	5.76	7.20	6.62½	6.77	12.00	11.00	11.71
July 3.77½	3.72½	3.75	5.67½	5.30	5.52	6.67½	6.00	6.20	11.37½	9.75	10.66
Aug. 3.75	3.70	3.73½	5.20	4.30	4.59	6.75	5.75	6.19			
Sept. 3.75	3.55	3.67	4.82½	4.35	4.53	6.95	6.50	6.71			
Oct. 3.65	3.35	3.39½	4.82½	4.40	4.51½	6.90	6.85	6.87½			
Nov. 3.82½	3.37½	3.58	5.22½	4.82½	5.08	7.25	6.85	6.96			
Dec. 3.70	3.60	3.67	5.42½	5.10	5.26½	8.00	7.20	7.53			
Year 4.10	3.35	3.74	7.50	3.50	4.57	8.25	5.15	6.80	12.00	7.30	9.76

* Seven months.

Aluminum, Silver, and Antimony
Prices in July.

— New York —			
Day.	Aluminum. Cents.	Silver. Cents.	Antimony. Cents.
1	58.00	77.87½	18.00
2	58.00	77.87	17.50
3	58.00	78.50	17.12
4	57.00	78.37	16.75
5		78.25	
6	57.00	78.75	16.50
7	57.00	79.50	16.37
8	56.00	80.00	16.15
9	56.00	80.25	16.25
10	56.00	80.75	15.75
11		79.57	
12	55.00	81.25	15.75
13	55.00	80.62	15.50
14	55.00	80.25	15.25
15	54.00	79.50	15.00
16	54.00	78.62	15.00
17	54.00	78.37	15.00
18	54.00	78.37	14.87½
19	49.00	78.12	14.87
20		78.12	
21	49.00	78.12	15.12
22	49.00	78.62	15.12
23	50.00	81.25	18.25
24	48.00	77.87	14.75
25	51.34	79.01	15.81

Imports of Aluminum.

(In tons of 2,000 lbs.)

	1913.	1914.	1915.	1916.	1917.
Jan.	1,590	616	636	425	1
Feb.	996	635	291	324	14
Mar.	1,007	741	388	223	2
April	1,773	678	153	406	3
May	1,169	586	209	696	none
June	880	548	893	325	
July	1,216	709	356	208	
Aug.	668	736	245	106	
Sept.	529	636	521	12	
Oct.	560	1,283	93	247	
Nov.	528	406	61	348	
Dec.	677	516	426	4	
Total	11,593	8,090	4,267	3,324	20

Exports of Domestic Lead.

(In tons of 2,000 pounds.)

	— 1916 —	— 1917 —
Jan.	7,192	\$790,447
Feb.	10,246	1,392,624
Mar.	8,585	1,068,459
April	5,870	857,095
May	7,558	1,027,273
June	7,167	1,062,616
July	9,008	1,276,316
Aug.	7,542	995,724
Sept.	15,633	2,012,413
Oct.	9,396	1,303,934
Nov.	6,402	887,429
Dec.	5,866	833,873
Total	100,465	13,508,203

STEEL AND METAL DIGEST

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The Situation

As was to be expected the continued delay in the Government's decision on its price-fixing policy, especially as regards iron, steel and copper, has been reflected in these trades, and in business in general, by a feeling of great uncertainty, and an almost complete cessation of new purchases. It could not be otherwise, as the prices to be fixed on the purchases of the Government and undoubtedly the Allies were certain to be below the supposed market, and the only question was how much below. Also the so-called "one-price-for-all" policy which was mentioned by the President, while generally regarded as quite impractical still remained in the thoughts of buyers as a possibility. But even if this influence had been absent, there were plenty of

other features to create extreme caution, and which have developed by reason of our entry into the war. To mention a few:

1st. The fact that the extremely large war profits of the past three years were at an end, and that even if the war continues for a year or more and the war demand for our commodities and manufactures are to be as large or larger than ever, these are to be supplied by Government regulations at prices which at the very best would be cost plus a fair profit only.

2nd. The surprising revelation that the program of the Government would call for expenditures and loans to the Allies fully double what was anticipated two months ago, all of which money must be supplied by our own people through taxation and the sale of Government bonds. That this would heavily withdraw from trade channels funds that ordinarily would be employed in construction and commercial enterprise.

3rd. The withdrawal from trade and manufacturing activities of over one million of our best workers and wage

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earnings with just so much decrease in our labor and with prospects of more to follow.

4th. The development of labor troubles, and the ugly fact that in many cases they have been caused by treasonable efforts under the insidious leadership of the enemy, intended to tie up the production of commodities necessary for our conduct of the war.

It is no wonder that business is unsettled and that it has been reflected by lower prices for many commodities and securities.

We believe however, that as the general condition of the country is sound, the crop outlook excellent, and that with our factories busy to the limit on old orders and actual necessities, and our railroads strained to meet traffic demands, that the situation is reassuring, and that a great reserve purchasing power exists in the country, more than can be exercised with the present war requirements.

The labor troubles have been taken in hand by the Government and wherever the result of treasonable influences will be squelched. It is quite evident that it only requires the decision as to what prices are to be fixed by the Government to at once release a flood of orders that have accumulated while the matter has been so long in doubt. It has not been values, but uncertainty as to Government action that has placed a dam across the stream of business. Already there are signs that even if the obstruction is to continue a few weeks longer, the pressure is getting too great, and each day business is being forced through the cracks in increasing quantity. Not only on account of this accumulation of demand, but with the basis of Government prices known, business will be very large, as buyers will act confidently, for it must be taken for granted that the prices to be arrived at will be fair, and sufficiently remunerative to producers to insure a production adequate to any possible requirements. Prices for the general public will fluctuate and will depend on the requirements and the supply. One thing is certain, prices will not go below the Government price. In this way prices will be stabilized, and we all

know what that means in increasing the confidence and volume of business, especially with the manufacturer.

But while the outlook is good, the war and the conditions it has created and the obligations that follow and will continue while the war lasts, will make great demands on our patriotism, our determination to put our greatest energies into the contest, a determination on the part of everyone to aid in keeping our country's position strong and sound, and to mention one way in which it can be done—by thrift.

Economy.

A great deal is heard about enforced economy, versus "business as usual". We have found, like England, that the latter condition is quite impossible with a nation engaged in war, and no one will question the necessity of the former if we are to spend on the war, including loans to our Allies, as much as \$8,000,000,000 to \$10,000,000,000 per year. True a large part of our expenditures will come back to the country in the production of materials for war purposes, including a great deal of the money we are advancing to our Allies, but being for war purposes will be an expenditure that makes no addition to our material wealth. True, a large part, being loans to our Allies, will be repaid in the distant future, but there is no blinking at the fact that the war means an enormous loss in the accumulated savings of the past. Also that to meet the situation our economies must be increased and our productive wealth increased. The latter must depend on the energies of our people, especially those engaged in what comes from the earth. But there must also be what we would call scientific economy on the part of all. An effort should be made to economize to the extent of the additional taxation and as far as possible for the amount one invests in Government bonds. We say it should be scientific, not that we believe the American public can ever be frightened into a panic of economy, that would be a disaster, but an economy that would represent true thrift, of which in the past we have had little experience. A thrift that will cause each man to consider whether the expenditure he

is about to make is wasteful or of real benefit to himself and his country. It is a patriotic duty as well as an economic duty and if universally observed will cause no diminution in the real material welfare, while enabling us to bear without disaster the enormous strains of the war.

Probably too few of our readers on account of mature age, family and business responsibilities, will be given the opportunity to be members of that noble company of American youth on whom will fall the privilege of physically fighting for the honor of their country, and for the freedom of the world and in which they are about to offer their lives on the altar of patriotism.

But the proportions of the war into which we have entered are so vast, its economic demands so far-reaching, its need for industrial and financial co-operation so vital, that no one need

fail to render active service for lack of opportunity.

To some of us has been given the opportunity to aid our government by our personal service and information in the mobilization of the industries of our country, and the response on the part of our leaders of industry has been inspiring.

Another Liberty loan is impending, and another opportunity will soon be ours to offer effective service and prove that we are in dead earnest in this contest for justice and liberty. Let the reply we will make be overwhelming and prove to our enemies that as Lloyd George said last week, our instinct has taught us that freedom is in real danger and that they are dealing with the great Republic of the West, a country that has never yet known defeat, a country of infinite resources, with qualities that make for enterprise, endurance and victory.

Business Trends.

A Marvelous Year in Foreign Trade.

It is significant of the change in point of view which has come with this country's entry into the great war, that the immense totals of foreign trade for the fiscal year closing with June have excited only a languid interest. Still, the apparently dry statistics of foreign commerce must at least be recorded if we are to have a clear afterview of the entire struggle, whether regarded from a commercial or a military standpoint.

Imports and exports alike broke all records in the fiscal year just closed, imports gaining 20%, exports 45% and total trade 37% over the hitherto high-record preceding year. It will be noted further that imports were over double those of so recent a year as 1909, while exports were considerably more than double those of 1915, and two and one-half times those of the last year of peace, 1914. Total trade was double that of 1915, but the most marvelous feature was the immense excess of exports over imports, \$3,634,000,000, which was 70% larger than the excess of 1916, over three times that of 1915, and over five times the excess shown in the year of largest excess previous to the war.

In the following table will be found the values in round millions of dollars of imports and exports of merchandise, the total trade in this direction, and the excesses of exports over imports in each of the past ten fiscal years:

Fiscal Year ended June 30th.

(Six figures omitted.)

	Imports.	Exports.	Trade total.	Excess of exps.
1917 ..	\$2,659	\$6,293	\$8,952	\$3,634
1916 ..	2,198	4,333	6,531	2,135
1915 ..	1,671	2,768	4,442	1,094
1914 ..	1,894	2,364	4,258	470
1913 ..	1,813	2,465	4,278	652
1912 ..	1,654	2,204	3,857	551
1911 ..	1,527	2,049	3,576	522
1910 ..	1,557	1,745	3,302	188
1909 ..	1,312	1,663	2,975	351
1908 ..	1,194	1,861	3,055	667

Iron Production Still Falling.

The August pig iron statistics emphasize again the little success of blast furnace operators in the face of coke scarcity. The output was 3,342,438 tons in July, or 107,820 tons a day. New modern blast furnaces were started last month at five steel plants—Midvale, Bethlehem, Donner, Republic, and Whitaker-Glessner—yet, with all this reinforcement, production declines. Many furnaces were banked for days at a time for lack of coke.

On September 1st, 357 furnaces were in blast, with daily capacity of 110,165 tons, while 351 furnaces, with daily capacity of 109,248 tons, were active on August 1st. The situation is well indicated by the fact that 25,660,000 tons of pig iron was produced in the first eight months of the year, or 175,000 tons less than in the first eight months of 1916, and yet 38 more furnaces were in blast at the opening of this month than on September, 1916.

The figures for the daily average production, beginning January, 1914, are as follows (in tons of 2,240 pounds):

	1914.	1915.	1916.	1917.
Jan.	60,808	51,659	102,746	101,643
Feb.	67,453	59,813	106,456	94,473
Mar.	75,738	66,575	107,667	104,863
April	75,665	70,550	107,592	111,165
May	67,506	73,015	108,422	110,238
June	63,916	79,361	107,053	109,002
July	63,150	82,691	104,017	107,820
Aug.	64,363	89,666	103,346	104,772
Sept.	62,753	95,085	106,745	.....
Oct.	57,361	100,822	113,189	.....
Nov.	50,611	101,244	110,394	.....
Dec.	48,896	103,333	102,537	.....

New Enterprises in August.

Continued activity is noted in the formation of new enterprises. Incorporations in the Eastern States last month with a capital of \$1,000,000 or over involved \$382,100,000. This is considerably above the average monthly total, although the figures show a falling off as compared with July of \$34,250,000. But in that month incor-

Business Trends.

porations were exceptionally heavy, having made the best showing in years. In August, 1916, the output of new companies aggregated \$113,472,000. Grand total of all companies chartered with \$100,000 or over covering all States amounted to \$462,061,900, comparing with \$174,933,000 in August a year ago and \$148,186,000 two years ago. The incorporations are of a diversified character, so much so that all lines of business are included in the returns. This indicates the unexampled prosperity still being enjoyed by various industries and the favorable outlook for business generally, at least for some time.

Following are the comparative figures as specially compiled by The Journal of Commerce and Commercial Bulletin of companies incorporated in the Eastern States during the last three years, with an authorized capital of \$1,000,000 or more.

	1917.	1916.	1915.
Jan.	\$244,450,000	\$270,995,000	\$51,150,000
Feb.	283,815,000	365,995,300	53,950,000
Mar.	281,000,000	194,750,000	70,050,000
April	361,510,000	166,650,000	32,200,000
May	388,481,000	209,735,000	78,950,000
June	352,584,000	264,350,000	181,247,100
July	416,350,000	217,662,500	71,100,000
Total	\$2,710,290,000	1,703,519,800	605,747,101
Aug.	382,100,000	113,472,000	67,100,000
Sept.	.....	164,700,000	286,625,000
Oct.	.....	303,768,700	208,695,000
Nov.	.....	260,407,800	190,075,000
Dec.	.....	230,850,000	135,125,000

Commodity Prices Still Rising

The broad swing of commodity prices, viewed collectively, is still toward a higher range. Ease in this or that particular respect is more than offset by advances in other directions and while governmental control of prices will soon become a fact, buying by the government has actually tended to make for higher quotations to the ordinary consumer.

As a result "Bradstreet's" index number for August 1st reflects a new

high level—\$16,398—thus indicating an advance of 2% over July 1st, and thereby reflecting a different tendency from that exhibited by English prices, which fell about 1% during July. Here, tofore, movements oversea and here have virtually coincided. However, the latest American index number displays a rise of 43% over August 1, 1916, of 68% over that date in 1915, of 88% over August 1, 1914, and of approximately 90% over July 1, 1914.

Failures Few And Small

Failures are usually at a low ebb in August, and past month was no exception to this rule, despite the withdrawal of men from industry by the war, the unsettlement ruling in many lines because of price uncertainty, and the more than ordinarily disturbed condition of labor in some sections, notably the Pacific Northwest. It is no surprise to learn that there were fewer failures in August than in any of the other months of this year, but it is worth noting that August this year had fewer failures than in any month for four years past, and also that the August total this year was the smallest reported in that month since 1911. Liabilities in August showed a decrease from those of July and were the lightest recorded in August since 1911. Very much the same showing is recorded for the eight months' period, the failures being the fewest reported since 1911 and the liabilities being the smallest since 1909.

Following will be found the record of August failures, with the liabilities and assets, as compared with the like month of preceding years as reported by "Bradstreets".

	Number.	Assets.	Liabilities.
1917	999	\$6,327,738	\$13,158,873
1916	1,304	7,055,860	15,697,534
1915	1,275	7,122,072	13,662,075
1914	1,191	16,282,162	37,128,027
1913	1,085	13,685,660	23,625,093
1912	1,020	5,769,827	14,912,021
1911	942	5,532,239	12,901,441
1910	950	5,288,028	11,778,436

The Steel Making Capacity.

With new construction lately completed the capacity of the United States for the production of steel ingots apart from castings, has reached approximately 50,000,000 tons, comprising about 22,000,000 tons for the Steel Corporation and 28,000,000 tons for the independents.

Such new capacity as can probably be completed within the next six months amounts to about 3,500,000 tons.

In both 1912 and 1913 the production of steel ingots was about 30,280,000 tons. By reason of increased capacity the output represented probably close to 95% of capacity in 1912, but a trifle less than 90% of capacity in 1913.

About September 1, 1915, the industry reached a stage of producing at capacity, a rate of about 37,000,000 tons a year. The first new construction, after quite a long interval, had started about two months earlier. Operations were substantially at capacity until late in 1916 when coke shortage, railroad congestion, and other difficulties caused operations to fall distinctly below capacity. The output in 1916 was 41,401,917 tons, which represented a trifle less than the average capacity of the year.

In the first six months of this year production was at the rate of about 43,000,000 tons a year, while in July the rate was about 44,000,000 tons, that being approximately 90% of capacity.

Under normal conditions the industry should be able to produce at fully 95% of capacity, but present conditions are abnormal, with scarcity of coke and of labor, together with various transportation difficulties.

If production were at capacity rate next year there would be about 43,500,000 tons of ingots to account for, comparing with 41,400,000 tons in 1916 and 30,280,000 tons in each of the two years

before the war, and it is a serious question whether so much steel can be absorbed.

In 1912 and 1913 the domestic consumption represented about 27,000,000 tons of ingots, while in 1916 the strictly domestic consumption, excluding all exports of steel and steel manufactures, represented about 33,000,000 tons. Assuming the war to continue through 1918 the demand will be made up of three items:

(1) Strictly domestic demand, which may very easily be less than the 33,000,000 tons of 1916, in view of the great reduction in certain lines, particularly in building operations.

(2) Requirements of the European Allies. One guess would be that these could be set against all exports in 1916, exports to neutrals being discontinued. This would give the Allies say one-third more steel and manufactures thereof than in 1916.

(3) Direct requirements of the United States Government. From the present outlook these do not promise to be as large as was forecast three months ago. With shipbuilding and shell-making in full swing the requirements may equal 6,000,000 tons of ingots, and there is a bare possibility of 8,000,000 tons being reached through undertakings that are not now in sight.

It will be understood that steel ingots are merely a measure. The tonnages do not represent commercial steel, as on account of material subtracted in process of manufacture, to be returned by going through the blast furnace or open-hearth furnace again, the output of finished rolled steel is only about 75% of the ingots cast. Thus 50,000,000 tons of ingots represent about 37,500,000 tons of rolled steel. To this should be added steel castings, which before the war only once exceeded a million tons, but in 1916 totaled 1,371,763 tons.

World-Wide Prices After the War --- A Forecast.

(By O. P. Austin, Statistician of the National City Bank of New York, in "The Americas")

After the war—what? That is the question which comes to the mind in these days of high prices and consequent high cost of living. With every year of the war we have encountered new advances in the cost of the requirements of every-day life, of food, of clothing, of manufactures and the material for their production, of books, of education and of travel and transportation. In the long list of the requirements and comforts, and even luxuries, of daily life, we find scarcely one in which the cost has not been greatly increased.

Will High Prices Continue?

Will these high prices continue at the termination of the war, when the millions now engaged in the destruction of property and life return to the arts of peace and industry? Shall we again see the nickel loaf of bread, the 20c a pound beefsteak, the 25c butter, the 5c a yard cottons, the 50c a bushel potatoes and corn, the 75c wheat, and ante-bellum prices for clothing, manufactures, books, educational facilities, transportation and travel?

These are questions which interest us all, for we are all affected by the tremendous advance in prices which we have experienced during the war. To say nothing of the slower, but insistent advances which preceded it. Shall we ever get back to the good old prices of a quarter century ago; or shall we at least return to the figures of the period immediately preceding the war, in which the increase had been much more rapid than that in years preceding it?

It is easier to ask these questions than to answer them, but there are certain great facts, statistical and otherwise, which we may study in conjunction with this inquiry, just as we study the clouds and the appearance of the heavens when we are at-

tempting to forecast the weather.

Inflation.

It is a generally accepted theory that "inflation" causes an advance of prices. We know, for example, either by our own recollection, or by reading of the comparatively recent history of the U. S., that great advances in prices occurred during the Civil War, in which there was an acknowledged "inflation" of our currency and that prices in the South, in which the inflation was still greater, were correspondingly higher. This was, we learn from history, equally apparent in the Revolutionary period, when the need for currency multiplied the "promises to pay," and from Mexico we hear of the enormous sums of paper money required to purchase a pair of boots or a Mexican hat in the period in which the printing presses of that unhappy country have been working overtime producing paper money—"promises to pay." And is not the increase in prices which we have experienced in recent years, and especially since the beginning of the war, the result, at least in part, of world "inflation," both in money and governmental promises to pay money? If not, what are the reasons for the tremendous increases?

Decrease in Labor and Transportation Facilities.

True, 25,000,000 men have been withdrawn from the arts of peace and production and are now engaged in the arts of war and destruction, but 25,000,000 men are an extremely small percentage of the world's producing population. True, there has been a material decrease in the carrying power on the oceans by the destruction of ships and consequent advances in cost of transportation of merchandise, but the net loss after considering their replacement by new vessels is less than 10% of the world's total ships while it can-

not be said that land transportation or transporting power has been reduced by war activities. Ocean freight rates have of course enormously advanced, not only by reason of the reduction of ships but by the increase in risk of transportation, but as few of our food-stuffs come to us from abroad, and an extremely small percentage of the materials for clothing or for the other requirements of life, we cannot charge to this incident of war, the destruction of ocean shipping, the enormous increase in the cost of living, which, according to the index numbers of accepted authorities amounts to about 90% when compared with that at the beginning of the war.

Producing World Extremely Busy.

The sun has shone as brightly over the producing world in the war period, except in that small area in which hostilities have actually occurred, as was the case before the war; the rains have been as plentiful and world production quite as great, taking one year with another. And even in those countries in which a certain percentage of the population has been transferred from the fields to the battle fronts the remaining element of population has been stimulated to an unusual activity in the matter of production. The manufacturing establishments have shown no reduction in their activities, but, on the contrary, have worked double time, frequently three shifts of men in every twenty-four hours, and are producing up to their highest capacity, far in excess of that in times of peace. So we cannot charge to nature or the absence of workers in the fields, the factories, or the transportation systems, the very great increase in cost of the requirements of daily life which has characterized the three years of war, but which was merely an intensification of the advance in prices which had occurred in the years preceding the war.

Increased Costs of Living and Price Advance Movement.

Figures produced by experts who make a careful study of the cost of the daily requirements of human life, and

express the result of their studies in terms known as "index numbers", agree in showing a steady advance in cost of commodities during last quarter of a century, but especially during war period. However much scientists may disagree upon other topics they do agree that the cost of living has steadily advanced during the last quarter of a century, and the advance has been greatly intensified during the war period, and especially during the second and third years of the war. The index numbers of the London Statist, a continuation of the Sauerbeck figures on the cost of living based upon the prices of large numbers of articles—the common requirements of mankind—show an advance from 61 in 1895 to 85 in 1913, the year immediately preceding the war. 108 in 1915, 137 in 1916, and for the first half of 1917, 170. Bradstreet's index numbers show an average of 64 in 1895, 92 in 1913, 118 in 1916 and for the first half of 1917, 161. The index numbers of the Department of Labor, which include wholesale prices of farm products, food, clothes and clothing, fuel and lighting, metal and metal products, lumber and building material, drugs and chemicals, house-furnishing goods, and miscellaneous articles, show for the year 1895 the index number 57, in 1913, 81 in 1916, 100, and for March 1917, 120. Each of these index numbers is based upon its own method of calculation, differing in certain methods of terms and expression from those used by others and they are not, therefore, comparable with each other for any single year, since the terms by which they express their results differ in each case, but the fact that the percentage of increase from the initial point, 1895, is quite similar in all three of these figures compiled by different authorities, in different countries, and under different circumstances and conditions, justifies the conclusion that the advance in prices has been general and at about the same rate in various parts of the world, especially as the prices in Great Britain, which brings most of its food supplies from abroad, must be largely determined by the prices in other parts of the world.

Price Advance Movement Began Long Before War.

It is apparent from the foregoing figures that the very great advances which we have so keenly experienced since the beginning of the war are a continuation and an intensification of an upward movement which began long before the war. It will also be noted from the figures of increase quoted that prices apparently advanced about 50% in the period from 1895 to 1913 and have increased about 90% in the short period 1913 to 1917.

In the statistical table presented herewith are shown the index numbers of the London Statist, Bradstreet's and the Department of Labor at intervals from 1895 to 1917. As they indicate, upon such acceptable proof, that there was an advance of approximately 50% in the cost of living from 1895 to 1913, and that there was a further advance of about 90% in the period from 1913 to 1917, we must therefore try to find the cause of this advance—the philosophy of it—if we are to attempt to forecast the movement of prices in the future.

Cause of Advance Beginning 1895 Intensified by the War.

What was the cause—at least the principal cause—of the steady advance in prices and cost of living, in the period 1895 to 1913? We can readily charge to the war, the withdrawal of men from peaceful pursuits, the great destruction of property, the special demand for war requirements and the increased cost of transportation, a part of the great advance which has characterized the more recent war period, but we cannot charge to any of these causes the advance of approximately 50% shown in the period from 1895 to 1913. That was a period of profound peace, of industrial activity, of general prosperity, with one or two comparatively slight interruptions.

What then can we consider as the true cause of the steady advance in prices which characterize the eighteen years preceding the war, and is that cause, whatever we may find it to be, also the required factor in determining the increased cost of living since the war, for nobody will claim that the

mere withdrawal of a small percentage of the world's population for war purposes or the increased cost of ocean transportation can be responsible for the tremendous advance in the cost of living during the war period.

Inflation the Cause, Increase in Money Supply and "Promises to Pay".

Increased supplies of money and "promises to pay" money, especially the latter in case they pass current as a substitute for money or a means by which it can be obtained, may be looked upon as "inflation," or at least a species of inflation. In the table which follows are shown the figures of the amount of money in circulation in forty principal countries of the world at intervals from 1895 to 1917. It will be seen from an examination of this table that the total gold money of the forty principal countries of the world increased from \$3,827,000,000 in 1895 to \$8,560,000,000 in July, 1917; silver money, it is true, declined from \$3,825,000,000 in 1895 to \$2,600,000,000 in 1917, but "uncovered paper," the third class of currency, has enormously increased, from \$2,178,000,000 in 1895 to \$13,500,000,000 in 1917. The total money—gold, silver and uncovered paper—of the forty principal countries of the world has increased from \$9,830,000,000 in 1895 to \$24,660,000,000 in 1917, an increase of 150%, while world population meantime has increased but about 13%.

Here is, of itself, a startling indication of world "inflation." Money, or that which is currently accepted as money, has increased 150% since 1895, while world population was increasing 13%. A very considerable percentage of this increase occurred during the war period, and especially in that group classed as "uncovered paper," in which the total grew from \$2,799,000,000 in 1913, the year preceding the war, to \$13,500,000,000 in July, 1917. The gold and silver money of the world increased comparatively little during the war period, while "uncovered paper" money increased nearly 400%.

Enormous Increase in "Uncovered Paper".

This large increase in "uncovered paper" since 1913 occurred chiefly in

the countries at war. The uncovered paper of the United Kingdom in 1913 was but \$115,000,000 and in 1917 \$660,000,000; Germany in 1913 \$262,000,000 and in 1917 \$1,613,000,000; France in 1913 \$326,000,000 and in 1917 \$2,900,000,000; Italy in 1913 \$182,000,000 and in 1917 \$661,000,000; for Russia no figures are available for 1913, but for January 1, 1915, the total is \$804,000,000 and in July, 1917, \$4,285,000,000. Nearly all of the world's large increase in "uncovered paper," from \$2,799,000,000 in 1913 to \$13,500,000,000 in 1917 occurs in the countries at war.

Nobody can doubt, apparently, that the increase in uncovered paper, above referred to, is an "inflation" in the ordinarily accepted sense of the term. But there is another form of "promises to pay" in which the increase has been equally startling, even greater in fact, proportionately and otherwise.

The world's national indebtedness has, as is well known to everybody, enormously increased in recent years, and especially during the present war. The total national debts of the world in 1895 were \$28,750,000,000 and in 1913, the year which preceded the war, \$43,840,000,000. With the beginning of the war the rapid increase which had characterized earlier years was greatly intensified, and by 1915 the national debts of the world were \$56,904,-

000,000, in 1916 \$96,950,000,000, and in July, 1917, \$106,000,000,000, nearly four times as much in 1917 as in 1895, and practically three times as much in 1913, the year immediately preceding the war.

These national debts of the various countries of the world are represented by bonds, stocks and other "promises to pay," chiefly long-term obligations. These bonds, or "stocks," as they are frequently termed in European countries, are not, of course, of the class of obligation usually termed as "currency," but they do pass current in a limited way in financial circles, and are in all cases available for obtaining currency when passed across the counter of any bank in the country of their issuance, or, in fact, in any country having plentiful supplies of loanable funds. While, therefore, it cannot be said that this great increase in national debts, and thus in national securities, is in the ordinary sense of the term an increase of currency, it is at least a very large increase in the class of securities upon which currency can quickly be realized when desired by their holders, and thus, at least, may be considered as contributory to the increase in world-circulating medium, and thus contributory to the "inflation," which has been an important factor in the advance in prices and cost of living.

Growth of Circulating Medium, National Debts and Cost of Living, 1895 to 1917.

		Money of 40 Principal Countries (In Million Dollars)			
		Uncovered			
		Gold.	Silver.	Paper.	Total.
1895	.....	3,827	3,825	2,178	9,830
1900	.....	4,565	3,679	2,756	11,000
1905	.....	5,601	2,964	3,138	11,703
1910	.....	6,704	2,599	3,127	12,430
1913	.....	8,021	2,860	2,799	13,680
1915	.....	7,111	2,125	5,971	15,207
1916	.....	8,258	2,441	8,583	19,282
July, 1917	.....	8,560	2,600	13,500	24,660
National Debts, All Principal Countries, Total.		Index Numbers of Prices of —Principal Commodities—			World Popula- tion in Millions.
		Statist.	Brad- street's.	Dept. of Labor.	
1895	\$28,750,000,000	61	64	57	1,501
1900	31,200,000,000	75	79	65	1,543
1905	36,560,000,000	72	81	69	1,576
1910	39,343,000,000	78	89	81	1,616
1913	43,840,000,000	85	92	81	1,652
1915	56,904,000,000	108	99	81	1,672
1916	96,950,000,000	137	118	100	1,681
July 1917	106,000,000,000	170	161	130	1,690

Inflation Will Continue After the War—Also High Prices.

That this enlarged stock of world money and promises to pay money will continue in existence after the end of the war goes without saying. There is little probability that the stocks of world money will be decreased or that any considerable cancellation of indebtedness can be expected in the years immediately following the close of the war. Mere interest payments on national indebtedness, which were less than \$2,000,000,000 per annum prior to the war, will probably be over \$5,000,000,000 at the end of the present year, and every breeze that blows from the

countries at war brings news of increased indebtedness and increased interest requirements. And there will be little opportunity to reduce the governmental obligations, in whatever form, for many years after the close of the war. While we may therefore expect a perceptible reduction in the cost of living when the 25,000,000 men now engaged in war cease their activities of destruction and return to those of production, we cannot expect that the proportion of the higher prices which is due to world inflation, or whatever name we may choose to give it, will disappear so long as the inflation itself continues.

A "Glut" of Steel.

Under the above caption the "Mining World", London, calls attention to the increase that have occurred and are occurring in the world's steel making capacity and wonders how the production can possibly be used after the war. It is pointed out that England made 8,000,000 tons of steel at the beginning of the war, and is expected to make 12,000,000 tons after the war. France has increased her capacity, and if given Lorraine will have that much more capacity, while Luxemburg may be added to Belgium, but our London contemporary thinks this may possibly be got around by requiring Germany to admit steel free of duty. Curiously enough, when a "glut" of steel is practically predicted, no definite mention is made of our own increase, the United States being dismissed with the statement that last year's production was about 40,000,000 tons and might have been larger if there had been more labor.

We would be willing to give our London contemporary a piece or two in addition to several pawns and then try to win the game. We admit to a much larger increase in steel production in the United States than is suggested in the article referred to. Last year's production was 41,400,000 tons, not 40,000,000 tons, but that was no measure of pre-war production and consump-

tion, since our best output had been 30,284,682 tons, in 1912. To England's increase of 4,000,000 tons, and France's increase of perhaps a very few million tons, together with the possible separation of Luxemburg and Lorraine from German influence, we add not only this difference of 11,000,000 tons, but also the fact that lately we have been making at the rate of 44,000,000 tons and have a prospective capacity of over 50,000,000 tons, or at least 9,000,000 tons to go in with the 11,000,000 tons.

We are fighting to make a new world, a world safe for democracy and at the same time a world safe from the menace of war. Before the German autocracy started on its mad course it was not a probability that there would be a general European war, but it was a distinct possibility. For years the war clouds were seen by investors and the investment of capital was restricted, particularly in countries or possessions that might become the pawns in the final peace settlement. After this war it will be altogether different. The world will be made safe for capital when it is made safe for democracy.

The great use of steel is for development. It is true we stitch our magazines with wire and pack articles of daily consumption in tin plate, but the great use of steel is to develop, to build bridges and viaducts, factory buildings,

railroads, power plants, water and otherwise, to reclaim arid land and swamp land. Steel with its new aid, concrete, is the material.

There is no limit to this consumption, noting particularly that it is not consumption in the ordinary sense, but employment. One invests in steel and receives an annual return thereafter. The course of demand in the United States has shown that. The fluctuations in demand have been largely the fluctuations in the willingness of capital to pass into investment. Steel production in 1906 was 61% greater than in 1904, and 67% greater than in 1908. Of course 1908 was a very poor year, but 1911 had nothing very much the matter with it, yet the 1912 production exceeded that of 1911 by 32%.

The per capita consumption of iron and steel has for a very long time been greater in the United States than in any other country. In 1912 and 1913, in finished rolled steel alone it was one-quarter gross ton per capita. Why? Chiefly because the country has been at peace and at liberty to develop. So will be the whole world. A few million

tons additional supply over what the world used prior to the war is simply nothing. It is the time to look at the affairs of the world in a large way. The world's capacity after the war may be one-third greater than its consumption before the war, but that is nothing in the light of the new world conditions and so versatile, so adaptable and so necessary a commodity of steel.

Any argument that there will be a glut of steel after the war certainly seems strange in the American atmosphere, when with the tendency towards new construction in many directions greatly reduced during the war, before we entered it, there has been a scarcity, and when now that we are in the war there will be vastly greater reduction in some directions. There is no question among those familiar with the situation that requirements in steel are banking up, to be expressed after the war. If the war should last another year, we have much more occasion to concern ourselves with the question whether demand will continue adequate during the war than with the question where will steel find outlets after the war.

Iron and Steel Statistics.

The annual statistical report of the American Iron and Steel Institute, covering statistics for the year 1916, has just made its appearance, a volume of 96 pages, 6x9 inches. This is the fifth report of the Institute, and it was preceded by 40 reports by the American Iron and Steel Association under the management of the late James M. Swank.

The statistics of production in 1916 had already been made public through the medium of four statistical bulletins which appeared at various times. The annual volume contains much additional information, showing rated capacities of blast furnaces, steel works, etc. The usual tables showing the proportionate output of the Steel Corporation are given, and some tables of average prices of commodities are appended, together with various other statistical items relating to branches

of the iron trade or correlated industries.

Capacities are given as follows, for December 31, 1916:

Mineral fuel furnaces	45,228,875
Charcoal furnaces	635,650
Total pig iron	45,864,525
Steel ingots:	
Acid open-hearth	1,411,805
Basic open-hearth	33,784,575
Total open-hearth	35,196,380
Bessemer	11,797,960
Crucible	233,460
Electric	357,595
Total ingots	47,585,395
Castings in addition	2,028,493

From 1915 to 1916 the Steel Corporation's proportion of the total output changed as follows: Pig iron, from 45.6% to 44.7%; steel ingots and castings, 50.9% to 48.9%; all finished rolled iron and steel, 44.6% to 44.4%; tin plate, 53.97 to 50.26%.

British Iron and Steel Production.

The production of steel ingots in the United Kingdom in 1916 was reported some time ago, and statistics of semi-finished and finished steel production are now reported. The production in gross tons in the past two years is shown below. Part of the steel represented in the ingots, of course, appears in the semi-finished steel, while all of this appears again in the finished steel statistics.

British Production—Gross tons.

	1915.	1916.
Steel ingots	8,370,944	9,138,500
Blooms, slabs, billets	943,545	1,945,200
Sheet bars	1,519,577	1,272,175
Bessemer rails ...	233,385	130,355
O. H. rails	139,789	66,653
Tram rails	11,986	1,373
Sleepers and fish-plates	68,177	38,891
Plates, $\frac{1}{8}$ in. up ..	1,160,327	1,153,385
Sheets under $\frac{1}{8}$ in.	1,367,577	780,587
Angles, tees, channels	762,717	757,769
Girders, joints ..	343,617	345,903
Merchant steel ..	534,503	523,546
Hoops and strips	176,036	186,416
Wire rods	169,562	203,715
Tires and axles ..	62,603	47,560
Welded pipes and tubes	104,453	111,212
Seamless tubes ..	63,716	65,568
Forgings	118,102	351,266
Castings	177,071	188,669
Unenumerated ..	770,981	2,542,279
Total finished steel	6,325,844	7,569,479

In the item of sheets there is included black sheets for galvanizing as well as black plates for tinning. The production of galvanized sheets, flat and corrugated, was 351,593 tons in 1915 and 131,707 tons in 1916. The production of tin and terne plate and tin and terne sheets was 603,386 tons in 1915 and 576,787 tons in 1916.

These figures need to be studied by those who acquired the idea that for the prosecution of the war our Government would require very large proportions of our steel output. If we wage

war as vigorously, in men and money, as England has done we shall do quite well. England's total production of finished steel last year was 7,569,479 tons. Ours was 30,557,818 tons, just four times as much. If England should use 40% of her steel output for war we should have an equal tonnage by taking 10% of ours.

The British steel output in 1916 was very largely a war output. Very little of the steel was used for strictly peace purposes, apart from the exports, and they were greatly reduced, about 2,400,000 tons. Of the tonnage not exported, a large portion of the sheets was undoubtedly used for military purposes, as was the case with rods. Rails were needed to maintain railway service at home as well as behind the trenches. Plates and structural shapes went into shipbuilding. The forgings were no doubt chiefly for guns. The "unenumerated", which increased from 770,981 tons in 1915 to 2,542,279 tons in 1916 was doubtless chiefly rounds for shells, chiefly the same material as in our own statistics is reported as merchant bars.

It is true that England's war requirements in steel were met in considerable part by imports from the United States, but the total drawn for that purpose was less than 20 of our output. If our peace consumption of steel were reduced by one-half the proportion that obtained in England there would be much more steel released than by any possibility could be employed for war purposes.

The quarterly blast furnace report of the "Iron and Coal Trades Review" shows that British production of pig iron has been increasing at a very considerable rate. The average number of furnaces in blast per quarter, omitting fractions, is shown below:

	1916.	1917.
First	288	315
Second	292	322
Third	297	
Fourth	306	

On June 30th there were eight blast

furnaces in course of construction. The increases shown in the above summary may reasonably be taken as having been due chiefly to the completion of new furnaces. As these would be of larger capacity than the average of the older furnaces, the balance of probability is strongly that the production of pig iron has increased in greater ratio than has the number of furnaces actually in operation. The average number in operation in 1916 was 296, while the average in the second quarter of this year was 322, and the number in blast on June 30th was 324. This is an increase of very nearly 10% in the number. The increase in pig iron production is for the purpose of producing more steel, last year's output of ingots having been 9,138,500 tons. The present rate of production may well be taken at very considerably more than 10,000,000 tons.

The increase in operations is very significant in the circumstances, for the British iron and steel industry has had

a great deal to contend with. There has been more or less shortage of labor right along, and there has been particular difficulty in finding enough coke. Then there has been great difficulty in the matter of ore, both as to shortage of men in mining domestic ore and in shortage of shipping with which to carry Spanish ore. The chief burden, apparently, has fallen upon the domestic production of ore, for the British Minister of Munitions has been urging the ore producers to produce much more ore, in order that shipping engaged in the Spanish trade might be released. Whether the ore imports have increased or decreased, however, is not known, as the statistics referring to ore have lately been omitted in the Board of Trade returns. There is no question that the increased iron and steel production of Great Britain is attained only with the greatest difficulty. The important fact is that it has been increased and we on this side should feel willing to make corresponding exertions and sacrifices.

Government Control of Manufacturing.

That the British Munitions Department is employing 2,000,000 persons is a fact that should be carefully considered by American manufacturers and workmen—and then acted upon. The British Government did not take over the plants because it wanted to, but because it found it necessary. The conditions under which the plants, with their 2,000,000 employes, are working are concisely described in a statement issued by the Committee on Co-operation with the Council of National Defense, printed in our issue of last Thursday.

The conditions it has been necessary to establish are not such as would be courted by either manufacturers or workmen. While the owners of the plants are left in charge they are restricted to profits 20% greater than the average in the pre-war period. The

workmen are limited in various ways and their wages cannot increase except by reason of an increase in the cost of living.

Will it be necessary for the United States Government to do as the British Government has done? The answer to that question rests chiefly with the manufacturers and their workmen. The only way in which the Government could act to bring about such a condition would be to fix prices it would pay so low that manufacturers could not meet them, with no control over labor. That seems quite improbable, though it must be confessed the level at which coal prices have been fixed is somewhat alarming.

This is war, and the authorities at Washington, who represent the people, are not justified, however they may feel personally, in exercising an undue

amount of patience with either manufacturers or workmen who will not come to terms that the work of the war may be expedited. Manufacturers and workmen alike should promptly recognize the fact that the alternative may be suddenly embraced, of commandeering works, as has been done in England. Terms would then be imposed upon both parties that neither would relish. There is certainly at least as much reason for imposing discipline upon those who manufacture munitions as upon those who use them, and if workmen are placed under such restraint they will find the change in their condition a very great one.

The Food Control law is in effect and its terms are being put into opera-

tion by the Administration. This places upon the Administration a responsibility as to labor. There are too many strikes now and too many are threatened. There have been many wage advances which have resulted chiefly in the men working less time, because they could make the money they wanted without working full time. The wage advances granted and asked are chiefly on the basis of increased cost of living. The operation of the Food Control law is expected to reduce the cost of living. Is it to be that men who have not been working full time are to work still shorter hours? Is it to be that strikes for higher wages "on account of the high cost of living" are to continue?

Cost of the War.

Two Estimates Compared.

The Wall Street Journal has made an estimate of the cost of the war to August 1st as \$90,000,000,000, which appears exceedingly conservative when set alongside that of the estimate recently published in the conservative Manchester Guardian. Latter placed cost of the war at \$107,500,000,000, and its figures probably were up to about the first of this month also. Casting The Wall Street Journal's figures into shape suitable to compare with those of the Manchester Guardian, the following table results:

Country.	The Wall
United Kingdom	\$96,705,000,000
Germany	19,750,000,000
Russia	14,250,000,000
France	16,530,000,000
Austria-Hungary	9,700,000,000
Italy	5,050,000,000
Other belligerents	6,329,000,000
Total	\$98,314,000,000
Less advances	8,592,500,000
Net cost	\$89,721,500,000

	Manchester
	Guardian.
United Kingdom	*\$27,500,000,000
Germany	25,000,000,000
Russia	17,500,000,000
France	15,000,000,000
Austria-Hungary	12,500,000,000
Italy	5,000,000,000

	Manchester
	Guardian.
Other belligerents	5,000,000,000
Total	\$107,500,000,000
Less advances	

Net cost

* British Empire. The Wall Street Journal's figures are for the United Kingdom only, expenditures of the overseas dominions being included in other belligerents.

The Manchester Guardian's article as reprinted in this country contains nothing to indicate whether it allows for the advances made by the United Kingdom to other nations in the Entente, by the United States to the Allies, nor by Germany to its partners in war. From our figures there has been deducted \$7,992,500,000 on account of such advances to the Entente Allies and \$600,000,000 for German advances to Austria, Turkey and Bulgaria.

On the other hand, the Manchester Guardian does not include any allowance for expenditures by the United States which is included in the Wall Street Journal's estimate at \$1,629,000,000; three-fourths of this represents our advances to the Allies, the balance being on account of our own war preparations. On August 1st our daily average war expenditures figured out at

\$19,100,000; Washington despatches last week placed them at \$24,463,652 daily for August.

It would appear that the English publication's estimate for the British Empire is decidedly low. With Canada's expenditures around \$1,000,000, 000 it is safe to assume that all the British dominions overseas have spent fully \$2,500,000,000 on the war, so that the Empire's war costs must be close to \$30,000,000,000 inclusive of Britain's advances to other countries.

On August 1st, The Wall Street Journal placed the average daily war expenditures at \$116,700,000 or \$3,617, 700,000 for a month of 31 days. Allowing for an increase of \$5,000,000 in the daily expenditure by the United States during August, the daily war cost is now almost \$121,000,000. This would bring the total cost on the end of this month, on the basis of The Wall Street Journal's calculations, to approximately \$92,500,000,000.

Pig Iron Production.

The American Iron and Steel Institute issues the following statistics of pig iron production in the United States, in gross tons:

Half-Yearly Production of All Kinds of Pig Iron.

States.	Blast furnaces In June 30, 1917.				Production—Gross tons. (Includes spiegeleisen, ferro-mang., ferro-silicon, ferro-phosphorus, etc.)		
	In blast Dec. 31, 1916.	In.	Out.	Total	First half of 1916.	Second half of 1916.	First half of 1917.
Massachusetts	1	1	1	2			
Connecticut	1	2	1	3	4,700	1,019	4,305
New York	18	21	6	27			
New Jersey	1	4	1	5	1,214,037	1,138,498	1,118,488
Pennsylvania ...	127	136	25	161	8,286,076	8,220,208	7,790,514
Maryland	4	4	1	5	243,895	257,557	234,589
Virginia	9	12	8	20	202,777	197,108	231,937
Georgia	0	0	4	4			
Texas	0	0	2	2			
Alabama	29	34	14	48	1,366,728	1,396,157	1,494,479
West Virginia ..	4	4	0	4			
Kentucky	4	4	3	7	268,859	285,731	282,548
Mississippi	0	0	1	1			
Tennessee	11	12	6	18	162,009	193,365	201,296
Ohio	65	72	5	77	4,250,790	4,352,105	4,269,708
Illinois	24	22	2	24	1,938,152	1,984,360	1,810,137
Indiana	10	12	0	12			
Michigan	12	12	2	14	1,073,768	1,147,940	1,200,122
Wisconsin	5	6	2	8			
Minnesota	3	3	0	3	417,542	393,793	392,864
Missouri	2	2	0	2			
Iowa	0	0	0	0			
Colorado	3	4	2	6	190,189	247,444	227,254
Oregon	0	0	1	1			
Washington	0	0	1	1			
California	0	0	0	0			
Total	333	367	88	455	19,619,522	19,815,275	19,258,235

Production By Grades.

Grades.	For Sale.	For maker's use.	Total Gross tons.
Basic	1,812,529	7,308,075	8,620,604
Bessemer and low phosphorus	1,103,328	5,938,099	7,041,426
Foundry, including ferrosilicon	2,548,789	53,659	2,602,448
Malleable	509,946	36	509,982
Forge or mill	58,154	140,760	198,914
Ferromanganese	46,802	84,163	130,965
Spiegeleisen	53,229	26,238	79,467
All other grades	52,013	22,416	74,429
Total	5,684,789	13,573,446	19,258,235

Steel Plants.

XXII. Colorado.

The Colorado Fuel & Iron Company is not often heard of in the East as its raw materials are all secured in the West while its products are also sold in the West. Its most eastern sales offices are in the four parallel states Nebraska, Kansas, Oklahoma and Texas. Nevertheless, a larger part of the area of the United States lies west of its most eastern sales office than east of it. There are no other large steel producers in that half of the country. Apart from Colorado the most westerly steel plant of importance is the Duluth plant of the Steel Corporation, which is farther west than St. Louis. About two-thirds of the area of the United States lies west of Duluth and only one-third east. Thus the West has its future before it.

The plant is located at Pueblo, Colo.,

comprising six blast furnaces built from 1901 to 1907, these superseding three furnaces built from 1880 to 1890, two 15-ton Bessemer converters and 15 60-ton open-hearth furnaces, blooming and billet mill, rail mill, two merchant mills, two rod mills of which one is equipped to roll merchant bars, and various finishing departments, including wire and wire nail plant, spike factory, bolt and nut factory and a cast iron pipe foundry.

Rated capacity is 625,000 tons of pig iron, 600,000 tons of Bessemer steel ingots, 540,000 tons of open-hearth steel ingots, 360,000 tons of rails, 300,000 tons of merchant bars and 120,000 tons of rods.

The coal and ore properties are numerous and widely distributed, but are chiefly in Colorado.

Topical Talks on Iron.

LII.—Materials Consumed by Blast Furnaces.

While the production of pig iron by blast furnaces is enormous, about half a ton for each man, woman and child in continental United States, the tonnage of material that enters and leaves the blast furnace is much larger. The slag produced weighs about one-half as much as the pig iron produced.

The raw materials entering the blast furnace make a still more formidable showing. In 1916, when there was produced 39,434,797 gross tons of pig iron, the following materials were consumed by blast furnaces:

Iron ore, gross tons	73,102,982
Mill cinder, scale, scrap, etc., gross tons	4,389,376
Coke, net tons	44,431,905
Bituminous coal, net tons	112,255
Anthracite, gross tons	64,664
Charcoal, bushels	36,865,920
Limestone, gross tons	18,308,119

Reducing the net tons and bushels there is a total weight of about 136,000,000 gross tons. Taking account of slag,

there is approximately four tons of material brought to or removed from the blast furnace, apart from the pig iron, for every ton of pig iron produced, making a total movement of five tons per ton of pig iron.

While there is about three and one-half tons of material brought to the blast furnace in order to make one ton of pig iron, the amount of material that actually enters the blast furnace is more than double this, for in average practice about four tons of air is forced into the furnace. The weight of the gases that leave the furnace is at least one and a half tons greater. The nitrogen of the air passes through without change, while the oxygen unites with carbon in the coke while the limestone produces carbon and oxygen, the principal ingredients of the gases leaving the furnace being nitrogen, carbon monoxide and carbon dioxide. Taking everything into account, in average practice the total weight of materials

passing through the furnace is about seven and a half gross tons. A trifle more than half the material goes in near the bottom, through the tuyers, a trifle less than half going in at the top, while only about one-fifth the material leaves at the bottom.

In 1916, for the entire production of pig iron, the average consumption of ferrous material was as follows, in gross tons per gross ton of pig iron produced:

Ore, briquettes, etc.	1.856
Cinder, scale, scrap, etc.111

Total	1.968
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The proportions vary somewhat from year to year on account of industrial and market conditions. In general, the consumption of iron ore per ton of pig iron has been increasing for

about 20 years in the case of Lake Superior ores constituting year by year a larger proportion of the total iron ore consumption, the other ores being as a rule leaner, the proportions for the whole country have not varied greatly. There are statistics beginning with 1909, which year showed 1.984, while 1911 was maximum in the period, with 2.018. In 1897 and 1898 pig iron prices were very low and only the richest Lake Superior ores could be profitably employed, the consumption of these ores per ton of pig iron being very low. The country's consumption then was about 70% Lake Superior and 30% from other districts, practically all much leaner. In 1916 the consumption of Lake Superior ore and the imported ores, also rich, was about 85%, the ores from other districts constituting about 15%.

Personal Efficiency.

The cry of the world to-day is for personal efficiency more than for any other single factor, but the public generally have in mind efficiency of processes and methods rather than efficiency of the man. Certain things contribute to the business man's efficiency, other things detract from it.

Dr. Crane says, "Efficiency is doing things, not wishing you could do them, dreaming about doing them, or wondering if you can do them."

It is the power to learn to do things by doing them, as learning to walk by walking, or learning to sell goods by selling them.

It is knowing how to apply theory to practice.

It is the trick of turning defeat into experience and using it to achieve success.

It is the ability to mass one's personality at any given time or place; it is skill in quick mobilization of one's resources.

It is making everything that is past minister to the future.

It is the elimination of the microbes

of weakness, regret, worry, and fear.

It is self-reliance clothed in modesty.

It is persistence plus politeness.

It is the hand of steel in the velvet glove.

It is alertness, presence of mind, readiness to adjust one's self to the unexpected.

It is sacrificing personal feelings to the will to win.

It is impinging the ego against the combination of events—luck, fate, custom and prejudice—until they give way.

It is massing the me against the universe.

It is the sum of the three quantities: purpose, practice and patience.

It is the measure of a man, the real size of his soul.

It is the ability to use one's passions, likes, dislikes, habits, experience, education, mind, body, and heart—and not to be used by those things.

It is self-mastery, concentration, vision and common sense.

IT IS THE SUM TOTAL OF ALL THAT'S IN A MAN.—Sheet of Brass.

The Iron and Steel Situation.

Features of August.

Scrap prices maintained.
Pig iron declines slight.
Billets decline sharply.
Plates decline.
General stagnation intensified.

The common appraisal in the trade of the iron and steel situation in August was that it was simply one of waiting for action at Washington. This would be true in a measure, and yet it would err as such appraisals usually do in seizing upon one salient feature and laying an undue amount of stress upon it. The test of the accuracy of the appraisal is the question what would the market have done if the trade had not been waiting upon action at Washington. Would the market have advanced? Certainly not. Would it have become active? Certainly not, without a readjustment in prices. Then—Was it Washington that prevented prices from declining?

We dwell on this because it is a psychological feature that is not peculiar to the steel trade. The principle is as broad as the whole realm of human affairs. We invent nice sounding reasons for what we do and have done so time on end. The psychologists find folk lore is full of it. An instance is the traditional explanation of why we eat with a fork—a knife is the dangerous. It is not so. The fork is the more dangerous, but much more convenient. Try it and see.

If the alleged "waiting on Washington" was waiting on a cue whereupon the schedule of iron and steel prices could proceed towards a readjustment of prices to a level which would permit transactions to be made safely, well and good, but such a readjustment could not be made in any few days, nor would buyers hasten to take hold during the process. If the trade thinks it was waiting for prices to be announced at Washington whereupon it would immediately accept them and proceed to do business on a large scale, the trade is quite welcome to that opinion. We do not concur.

Price Fixing by Washington.

At this writing the trade is in daily expectation of an announcement at Washington regarding steel prices, and such announcement may have been made by the time this review sees the light. The situation is that Washington is to announce prices the Government will pay for the steel it requires for war. That will settle the matter in respect to that business. Some think the Government will undertake to fix prices for the general market. Others, the great majority, think not. If the Government does, either buyers or sellers will refuse to transact business, at least for a time. The seller will regard the prices too low and explain he is sold up and cannot accept orders, or the buyer will be afraid that the prices, being maximum, not maximum and minimum combined, are too high and may be cut later, so he will hold off and take time to form a conclusion.

If the Government does not name prices for the general trade, we are where we started from and the market will continue to await the time when it can develop a new price level in an orderly and customary manner. After a period of heavy buying and continued price advances there is always this period of stagnation, a wait to see how much of a decline the buyers can force.

Precedents Are Worth While.

It has become a trite saying in the past year and a half that the doings in the iron and steel trade are without precedent. Men have made more mistakes by ignoring precedents than by observing them. Like causes produce like results and when an error is made through an alleged following of precedent the trouble is usually that the things set together are really different after all. The precedent is not a precedent. It seems to be the safer policy to measure the present and future of the iron and steel market in the light of precedents, seeking to allow for differences in conditions.

In the past, a period of heavy buying and of price advances has always been followed by a general readjust-

that can be maintained indefinitely, to the end of the war, it is a miracle that prices did not advance still farther. How did they chance to stop at a safe level? If ever there was a runaway this was one, and by the amount that price advances, until lately, frightened buyers into buying, by that amount at least will they be encouraged to wait now that they see the price structure weakening.

No, Government action or not, the iron and steel market is in the early stages of a general and drastic readjustment in prices, and in its own good time it will work the problem out.

Progress in Readjustment.

The simplest and safest plan is to accept the idea that a readjustment is occurring and view the future in the light of what has occurred, for distinct, though not great, progress has already been made.

Late in June the scrap market began to decline. It is always sensitive for it is a free and wide open market

but it does not ride hobbies and does not separate itself too far from the general procession. Hence, when it declined for several weeks and found it had scarcely any company, in August it remained stationary if on the whole it did not stiffen a trifle. It has not reacted to its former level. The decline is written into history. It is simply the August did not add to the decline.

Pig iron showed some weakening in July, little in the matter of price, everything in the matter of activity. August has witnessed a continuance of the absence of buying, and has contributed some noteworthy declines, though not many. Bessemer iron, which in June had reached a stage at which \$56, valley, was the minimum for any delivery, sold at as low as \$50 in August. Basic iron at valley furnaces, which had brought \$53 and \$54, sold in regular course at \$48, in the closing days of the month. Basic in the East declined likewise. If the market on other grades and in other districts did not decline

Finished Steel Prices.

(Averaged from daily quotations, f.o.b. Pittsburgh.)

	Shapes	Plates.	Bars.	Pipe.	Wire.	Grooved			Sheets			Comp. Fin. steel.
						Wire Nails.	Steel Skelp.	Black.	Galv.	Blue Annid.	Tin plate.	
1916.												
January	1.87	1.90	1.87	76 $\frac{3}{4}$	1.98	2.13	1.75	2.60	4.75	2.55	3.75	2.1410
February ..	2.06	2.16	2.06	75 $\frac{1}{2}$	2.11	2.26	1.94	2.60	4.80	2.65	3.83	2.2988
March	2.36	2.53	2.36	73 $\frac{3}{8}$	2.25	2.40	2.24	2.73	4.93	2.85	4.20	2.5579
April	2.50	2.75	2.50	71 $\frac{1}{2}$	2.25	2.40	2.35	2.89	5.00	2.95	4.70	2.7166
May	2.50	2.83	2.50	70	2.45	2.50	2.35	2.90	5.00	3.00	5.46	2.8043
June	2.50	2.90	2.50	70	2.45	2.50	2.35	2.90	4.80	3.00	5.75	2.8300
July	2.50	2.90	2.50	70	2.45	2.50	2.35	2.90	4.40	2.90	6.00	2.8423
August ...	2.54	2.94	2.56	70	2.53	2.58	2.35	2.90	4.20	2.90	5.54	2.8588
September .	2.60	3.00	2.60	69 $\frac{1}{4}$	2.55	2.60	2.35	2.91	4.20	2.90	5.75	2.9013
October ...	2.63	3.07	2.62	69	2.59	2.64	2.40	3.23	4.50	3.15	5.77	2.9747
November .	2.86	3.33	2.76	68 $\frac{1}{2}$	2.79	2.84	2.75	3.72	5.34	3.66	6.40	3.2036
December ..	3.03	3.53	2.93	66	2.95	3.00	2.85	4.40	6.27	3.65	7.18	3.4679
Year	2.50	2.82	2.48	70 $\frac{3}{4}$	2.45	2.53	2.34	3.06	4.85	2.99	5.34	2.8009
1917.												
January	3.11	3.61	3.00	64	2.95	3.00	2.85	4.50	6.50	4.25	7.23	3.5249
February ...	3.25	3.75	3.00	62 $\frac{7}{8}$	2.95	3.00	2.85	4.63	6.75	4.50	7.83	3.6529
March	3.52	4.33	3.27	60 $\frac{3}{4}$	3.13	3.18	3.50	4.90	7.00	4.70	8.00	3.9454
April	3.70	4.50	3.39	55	3.23	3.28	3.50	5.88	7.40	5.40	7.60	4.1965
May	4.00	4.50	3.64	49	3.45	3.50	3.75	6.73	9.00	6.70	8.00	4.5272
June	4.25	7.10	4.00	49	3.66	3.71	5.00	7.50	9.75	8.00	8.00	5.1587
July	4.50	9.00	4.50	42	3.95	4.00	6.00	8.00	10.50	8.25	8.00	5.7975
August ...	4.50	8.96	4.50	43 $\frac{1}{2}$	3.95	4.00	5.50	8.00	10.35	8.00	8.00	5.7161

it was simply because there was no incentive for the development of a new market level. There was no demand that would cause sellers to show what they would do.

In June billets became thoroughly established at \$95 as minimum, and this price remained the market quotation throughout July. The common appraisal of the situation then was that the mills would probably accept lower prices eventually but were engaged in filling high-priced orders. Early in August offerings began to appear at lower prices and the offerings were attended with the expected result. There were practically no buyers. The offer-

ings were continued down to \$75, representing a clear decline of \$20 a ton, while offerings at \$70 were daily expected.

Thus we have scrap, pig iron, billets, quite in the logical order. Next would come finished steel products. Up to August there had been no discernible weakening at any point in the finished steel price structure. Lake in August plates scored a definite decline. While the market for tank quality had been quotable strong at 9 to 10 cents there were offerings at 8 cents and less. There was one sale of 400 tons of regular tank quality and size on the basis of 7.85 cents, Pittsburgh, but the price

U. S. Steel Corporation's Operations.

Earnings and Unfilled Orders.

Earnings by Quarters.

Net earnings by quarters since 1911:

Quarter.	1917.	1916.	1915.
1st	*\$113,121,018	\$60,713,624	\$12,457,809
2nd	†90,579,304	81,126,048	27,950,055
3rd		85,817,067	38,710,644
4th		105,968,347	51,277,504
Year ...		333,625,086	130,396,012

* Excess profits expected to be deducted, \$33,865,000.

† After deducting expected excess profits tax, \$53,918,872.

	1914.	1913.	1912.
1st	\$17,994,382	\$34,426,802	\$17,826,973
2nd	20,457,596	41,219,813	25,102,266
3rd	22,276,002	38,450,400	30,063,512
4th	10,935,635	23,084,330	35,181,922
Year	71,663,615	137,181,345	108,174,673

Unfilled Orders.

(At end of the Quarter.)

	First.	Second.	Third.	Fourth.
1904 ..	4,136,961	3,192,277	3,027,436	4,696,203
1905 ..	5,579,560	4,829,655	5,865,377	7,605,086
1906 ..	7,018,712	6,809,584	7,936,884	4,489,718
1907 ..	8,043,858	7,603,878	6,425,008	6,442,553
1908 ..	3,765,343	3,313,876	3,421,977	3,603,527
1909 ..	3,542,590	4,057,939	4,796,833	5,927,031
1910 ..	5,402,514	4,237,794	3,158,106	2,674,751
1911 ..	3,447,301	3,361,058	3,611,317	5,084,767
1912 ..	5,304,841	5,807,346	6,551,507	7,932,164
1913 ..	7,468,956	5,807,317	5,003,785	4,282,108
1914 ..	4,653,825	4,032,857	3,787,667	3,836,643
1915 ..	4,255,749	4,678,196	5,317,608	7,805,220
1916 ..	9,331,001	9,640,458	9,522,584	11,547,286
1917	11,711,644	11,383,287		

Bookings and Shipments.

In this table, first two columns, percentages of bookings and shipments to total capacity, our own estimates, while last column is derived from official reports of "unfilled tonnage" while third percentage column is directly computed from this tonnage column.

	Ship- ments.	Book- ings.	Dif- ference.	Dif- ference.
1915	%	%	%	Tons.
June	79	113	+34	+413,598
July	83	104	+21	+250,344
August ...	91	89	-2	-20,085
September .	98	133	+35	+409,163
October ...	103	172	+69	+847,834
November .	102	186	+84	+1,024,037
December .	102	152	+50	+615,731

1916—

January ...	102	112	+10	+116,547
February ..	102	157	+55	+646,199
March	104	164	+60	+762,035
April	104	146	+42	+498,550
May	104	113	+9	+108,247
June	104	82	-22	-297,340
July	90	86	-4	-46,866
September .	96	87	-9	-137,773
October ...	106	145	+39	+492,676
November .	104	189	+85	+1,043,282
December .	96	136	+40	+488,744

1917—

January ...	92	86	-6	-73,232
February ..	92	101	+9	+102,643
March	97	107	+10	+134,947
April	99	137	+38	+471,439
May	98	75	-23	-296,492
June	98	59	-39	-503,304
July	92	49	-43	-339,123

Total unfilled obligations, July 31, 1917, 10,844,164 tons.

realized at the eastern mill making the sale was only 7.70 cents.

The plate decline might be attributed to the embargo, but as to the bulk of the tonnage that is only temporary, awaiting certain diplomatic arrangements. The expected large additions to capacity might also be cited, perhaps 125,000 tons a month of plate rolling capacity being expected within six months or so, but plates are the one article for which the war is expected to produce an absolutely unlimited demand, as witness the hard death of the wooden ship program. If the market carried plates too high it presumably carried other products too high also.

Prospects for Consumption.

It is patent that in many directions the ordinary peace consumption of steel is decreasing, and will decrease more. There has been very little new building undertaken, but many of the former projects are not completed, so that in actual consumption there will be a large decrease. This applies not simply to structural shapes but to the various other items that are involved in building, including wood and concrete buildings. In 1916 we made 41,400,000 tons of steel ingots and supplied an enormous domestic demand, activity in al-

most every direction, while we shipped millions of tons to the Entente Allies, an amount equal to about 8,000,000 tons of ingots, roughly speaking. Now our production is at the rate of fully 44,000,000 tons and our capacity is nearly, if not quite, 50,000,000 tons, if all conditions for full operation were favorable, and there is new construction promising nearly 4,000,000 tons additional within six or nine months if the work can be prosecuted. With the capacity we shall be called upon to supply domestic demand, the requirements of our Government and the requirements of our Allies, the first promising to decrease, the second not being certain to be greater than in 1916 and the third promising up to date not to engage more than 10%, or possibly 15% at the outside, of the capacity. Later the Government requirements may be larger, but we must wait and see.

Finally, avoid the one-sided view that labor scarcity restricts only the production of steel. It requires labor to manufacture steel into finished forms and put it into employment. Also, when the Government calls for steel from the steel mills it also employs labor in working it up, and some of the Government requirements involve more labor, per ton of steel taken, than is the case with common every day consumption.

Lake Superior Iron Ore.

Shipments of iron ore down the lakes have been as follows, in gross tons:

	1913.	1914.	1915.	1916.	1917.
April	866,386	269,686	503,832	1,658,411	211,532
May	7,284,212	3,852,063	5,012,359	8,449,580	6,283,612
June	7,974,444	5,502,367	6,005,091	9,507,576	9,639,991
July	8,204,416	5,784,514	7,204,021	9,750,157	10,241,633
August	7,677,601	5,869,477	8,081,117	9,850,140	10,146,786
September	7,258,413	5,431,307	7,863,146	9,600,786	
October	6,526,103	4,242,392	7,146,873	9,116,196	
November	3,270,958	1,070,092	4,445,129	5,715,452	
December	18,545	.....	57,236	1,085,900	
Season Lake ..	49,070,478	32,021,897	46,318,804	64,734,198	36,523,554

Comparison of Metal Prices.

	Range for 1915		Range for 1916		Range for 1917		Closing,
	High.	Low.	High.	Low.	High.	Low.	Aug. 31, 1917.
Pig Iron.							
Bessemer, valley	21.00	13.60	35.00	20.00	56.00	35.00	52.00
Basic, valley	18.00	12.50	30.00	17.75	54.00	30.00	48.00
No. 2 foundry, valley	18.50	12.50	30.00	18.25	53.00	30.00	53.00
No. 2X fdy. Philadelphia. .	19.50	14.00	30.75	19.50	52.75	30.75	52.75
No. 2 foundry, Cleveland .	18.80	13.00	30.95	18.50	54.30	30.95	54.30
No. 2X foundry, Buffalo. .	18.00	11.75	35.00	18.00	52.00	35.00	50.00
No. 2 foundry, Chicago ..	18.50	13.00	30.00	18.00	55.00	30.00	55.00
No. 2 South'n Birmingham	14.50	9.25	25.00	14.00	48.00	24.00	45.00
Scrap Iron and Steel.							
Melting steel, Pittsburgh. .	18.00	11.00	27.00	16.00	47.00	22.00	36.00
Heavy steel scrap, Phila. . .	16.25	9.50	24.50	14.75	42.00	20.50	33.00
Heavy melt. steel, Chicago	15.25	8.75	24.00	14.50	43.00	21.50	33.00
No. 1 R. R. wrought, Pitts. .	17.25	10.75	29.00	17.50	47.00	19.50	33.50
No. 1 cast, Pittsburgh	15.00	11.00	23.50	14.75	38.00	19.75	30.50
Iron and Steel Products.							
Bessemer rails, mill	28.00	28.00	38.00	28.00	38.00	38.00	38.00
Iron bars, Pittsburgh	1.90	1.20	3.25	1.90	5.25	3.25	5.00
Iron bars, Philadelphia ...	2.06	1.12½	3.16	2.06	5.16	3.16	4.94
Steel bars, Pittsburgh	1.80	1.10	3.00	1.85	4.50	3.00	4.50
Tank plates, Pittsburgh ...	1.60	1.10	3.60	1.85	9.00	3.50	8.00
Structural shapes, Pitts. . .	1.80	1.10	3.10	1.85	4.50	3.10	4.50
Grooved steel skelp, Pitts. .	1.75	1.12½	2.85	1.75	6.00	2.85	5.00
Black sheets, Pittsburgh ..	2.60	1.70	4.50	2.60	9.00	4.50	8.00
Galv. sheets, Pittsburgh ..	5.00	2.65	6.50	4.15	11.00	6.25	10.00
Tin plate, Pittsburgh	3.60	3.10	7.50	3.75	8.50	7.00	8.25
Wire nails, Pittsburgh	2.10	1.50	3.00	2.10	4.00	3.00	4.00
Steel pipe, Pittsburgh	79%	81%	64%	72%	42%	64%	49%
Connellsville Coke at ovens.							
Prompt furnace	3.50	1.50	12.00	2.50	16.00	8.00	13.00
Prompt foundry	3.75	2.00	12.00	3.25	16.00	10.00	13.50
Metals—New York.							
Straits tin	57.00	32.00	56.00	37.50	66.50	42.50	61.87½
Lake copper	23.00	13.00	36.00	23.00	37.00	27.00	27.50
Electrolytic copper	23.00	12.80	36.00	23.00	37.00	25.50	25.75
Casting copper	22.00	12.70	34.00	22.00	34.00	25.00	25.50
Sheet copper	27.25	18.75	42.00	28.00	44.00	36.00	37.00
Lead (Trust price)	7.00	3.70	7.50	5.50	11.00	7.50	10.50
Spelter	27.25	5.70	21.17½	8.37½	11.50	7.92½	8.17½
Chinese and Jap. antimony	40.00	13.00	45.00	10.50	36.00	14.25	14.62½
Aluminum, 98-99%	60.00	18.75	67.00	53.00	64.00	46.00	47.00
Silver	56½	46¼	77¼	55¾	90¾	79	90¼
St. Louis.							
Lead	7.50	3.50	8.25	5.45	12.00	7.30	10.25
Spelter	27.00	5.55	21.00	8.20	10.87½	7.75	8.00
Sheet zinc (f.o.b. smelter)	33.00	9.00	25.50	15.00	21.00	19.00	19.00
London.							
Standard tin, prompts	190	148¼	205	161½	256½	180¾	244½
Standard copper, prompts	86¾	57¼	153	84	146	120	120
Lead	30¼	18¼	36½	27¾	30½	30½	30½
Spelter	110	29¾	110	44	55	45½	54
Silver	27¼d	22¾d	37d	26½d	46d	35½d	46d

Comparison of Security Prices.

	Range for 1915		Range for 1916		Range for 1917		Closing, Aug. 31, 1917.
Iron and Industrial Stocks.	High.	Low.	High.	Low.	High.	Low.	
Allis-Chalmers Mfg.	49 $\frac{1}{8}$	7 $\frac{3}{4}$	38	19	32 $\frac{1}{8}$	20 $\frac{1}{4}$	24 $\frac{1}{8}$
Allis-Chalmers Mfg. pfd.	85 $\frac{3}{8}$	33	92	70 $\frac{1}{2}$	86 $\frac{7}{8}$	79 $\frac{1}{4}$	83
American Can	68 $\frac{1}{2}$	25	68 $\frac{1}{2}$	44	53	36	40
American Can pfd.	113 $\frac{1}{2}$	89	115 $\frac{3}{8}$	107 $\frac{7}{8}$	111 $\frac{1}{2}$	103	106 $\frac{1}{2}$
American Car & Fdy.	98	40	78 $\frac{1}{2}$	52	80 $\frac{3}{4}$	57	68 $\frac{1}{4}$
American Locomotive	73 $\frac{3}{4}$	19	98 $\frac{1}{4}$	58	82 $\frac{3}{4}$	59 $\frac{1}{2}$	60 $\frac{3}{4}$
American Smelt'g & Refining	108 $\frac{7}{8}$	56	123 $\frac{3}{4}$	88 $\frac{1}{2}$	112 $\frac{3}{4}$	92 $\frac{3}{4}$	94
American Steel Foundries ..	74 $\frac{1}{2}$	24 $\frac{1}{8}$	73	44	75 $\frac{1}{2}$	52	62 $\frac{1}{2}$
American Zinc, Lead & Smelt'g	71	67 $\frac{1}{4}$	97 $\frac{7}{8}$	29 $\frac{1}{8}$	41 $\frac{1}{8}$	15	19 $\frac{1}{2}$
Anaconda Copper	91 $\frac{1}{8}$	49 $\frac{1}{2}$	105 $\frac{3}{8}$	77	87	68	69 $\frac{5}{8}$
Baldwin Locomotive	154 $\frac{1}{2}$	26 $\frac{5}{8}$	118 $\frac{5}{8}$	52	76 $\frac{1}{2}$	43	57 $\frac{1}{2}$
Bethlehem Steel	600	46 $\frac{1}{4}$	700	415	515	109 $\frac{3}{4}$	110 $\frac{1}{2}$
Bethlehem Steel pfd.	184	91	168	126	135	103	103
Chino Copper	57 $\frac{3}{8}$	32 $\frac{3}{4}$	74	46 $\frac{1}{8}$	63 $\frac{3}{4}$	48 $\frac{1}{8}$	52
Colo. Fuel & Iron Co.	66 $\frac{1}{2}$	21 $\frac{3}{4}$	63 $\frac{1}{2}$	38 $\frac{1}{8}$	58	38 $\frac{1}{2}$	43 $\frac{1}{2}$
Crucible Steel	109 $\frac{7}{8}$	18 $\frac{1}{4}$	99 $\frac{1}{2}$	50 $\frac{1}{4}$	91 $\frac{7}{8}$	50 $\frac{1}{2}$	67 $\frac{1}{2}$
Crucible Steel pfd.	112 $\frac{1}{2}$	84	124 $\frac{7}{8}$	108 $\frac{1}{4}$	117 $\frac{3}{4}$	99 $\frac{1}{4}$	99 $\frac{1}{4}$
Driggs-Seabury .....	...	...	119 $\frac{3}{4}$	45 $\frac{1}{8}$	87 $\frac{1}{2}$	39 $\frac{7}{8}$	79
General Electric	185 $\frac{1}{2}$	138	187 $\frac{1}{4}$	159	171 $\frac{1}{4}$	147	147
Granby Consolidated	91	79 $\frac{1}{4}$	120	80	92 $\frac{3}{8}$	75 $\frac{1}{2}$	79
Great Northern Ore Prop. ..	54	25 $\frac{1}{4}$	50 $\frac{3}{4}$	32	38 $\frac{1}{8}$	27 $\frac{3}{4}$	33 $\frac{3}{4}$
Gulf States Steel .....	...	...	193	71	137	96	101
International Harv. of N. J. ..	114	90	126 $\frac{7}{8}$	108 $\frac{1}{2}$	123	107 $\frac{1}{2}$	111 $\frac{1}{4}$
Inter. Harv. of N. J. pfd.	85	55	129	114	121	114	117 $\frac{1}{2}$
International Harv. Corp. ...	114	90 $\frac{1}{2}$	90 $\frac{1}{4}$	68 $\frac{1}{8}$	88	65	75
Inter. Harv. Corp., pfd. ...	120	100	114 $\frac{3}{4}$	104 $\frac{7}{8}$	114	101	105
Lackawanna Steel	94 $\frac{3}{4}$	28	107	64	103 $\frac{7}{8}$	70 $\frac{1}{8}$	80
National Enam. & Stamp.	36 $\frac{1}{2}$	9 $\frac{1}{2}$	36 $\frac{1}{2}$	19 $\frac{3}{4}$	45 $\frac{1}{2}$	24	38
National Enam. & Stamp. pfd.	97	79	100 $\frac{1}{2}$	90 $\frac{1}{8}$	101	90 $\frac{1}{2}$	99 $\frac{3}{8}$
National Lead	70 $\frac{3}{4}$	44	74 $\frac{5}{8}$	57	63 $\frac{1}{4}$	52	52 $\frac{1}{2}$
National Lead, pfd.	115	104 $\frac{3}{4}$	117 $\frac{1}{8}$	111 $\frac{1}{4}$	114	101	109
New York Air Brake	164 $\frac{3}{4}$	56 $\frac{1}{2}$	186	118	156	125 $\frac{1}{4}$	125 $\frac{1}{4}$
Pressed Steel Car	78 $\frac{1}{4}$	25	88 $\frac{1}{4}$	42 $\frac{1}{2}$	80 $\frac{1}{4}$	60	60
Pressel Steel Car, pfd.	106	86	108	8 $\frac{1}{2}$	106	100	102
Railway Steel Spring	54	19	61 $\frac{3}{4}$	33	58	43	46 $\frac{1}{8}$
Railway Steel Spring pfd. ...	102	86 $\frac{1}{2}$	104 $\frac{3}{4}$	95 $\frac{1}{4}$	101	94	99
Ray Consolidated Copper	27 $\frac{1}{2}$	15 $\frac{1}{4}$	37	20	32 $\frac{1}{4}$	23	25 $\frac{1}{2}$
Republic Iron & Steel	57 $\frac{1}{4}$	19	93	42	94 $\frac{1}{2}$	60	79 $\frac{5}{8}$
Republic Iron & Steel, pfd. ...	112 $\frac{5}{8}$	72	117	101	105 $\frac{7}{8}$	99	101 $\frac{5}{8}$
Sloss-Sheffield	66 $\frac{7}{8}$	22	93 $\frac{1}{4}$	37	74 $\frac{3}{4}$	42 $\frac{7}{8}$	48 $\frac{1}{4}$
Sloss-Sheffield, pfd.	102	85	103 $\frac{1}{2}$	91 $\frac{1}{2}$	99	93	93
Texas Company	237	120	241 $\frac{1}{2}$	177 $\frac{1}{4}$	243	156 $\frac{7}{8}$	162 $\frac{1}{2}$
U. S. Cast Iron Pipe	31 $\frac{1}{8}$	8	28 $\frac{1}{2}$	16 $\frac{3}{4}$	24 $\frac{1}{2}$	16 $\frac{3}{4}$	17
U. S. Cast Iron Pipe pfd.	55 $\frac{1}{2}$	32 $\frac{1}{2}$	67 $\frac{1}{2}$	48 $\frac{1}{2}$	62 $\frac{3}{4}$	52	52
U. S. Smelting & Refining ..	...	...	81 $\frac{1}{2}$	57	67 $\frac{3}{4}$	52 $\frac{3}{8}$	58
U. S. Smelting & Refining pfd. ...	...	...	53 $\frac{1}{2}$	50	52 $\frac{1}{4}$	49	50
U. S. Steel Corporation	89 $\frac{1}{2}$	38	129 $\frac{1}{4}$	79 $\frac{1}{4}$	136 $\frac{5}{8}$	99	109 $\frac{1}{2}$
U. S. Steel Corporation, pfd. ...	117	102	123	115	121 $\frac{1}{4}$	116 $\frac{5}{8}$	116 $\frac{3}{4}$
Utah Copper	81 $\frac{3}{4}$	48 $\frac{1}{2}$	150	73 $\frac{3}{4}$	118 $\frac{3}{4}$	93 $\frac{1}{4}$	94 $\frac{1}{4}$
Virginia Iron, Coal & Coke..	74	36	72 $\frac{3}{4}$	41	77	46	60
Westinghouse Elec. & Mfg. ...	74 $\frac{7}{8}$	32	71 $\frac{1}{8}$	51 $\frac{1}{4}$	56	43 $\frac{1}{2}$	44 $\frac{1}{4}$

Railroad Earnings.

Railroad earnings per mile of road, having annual operating revenues above \$1,000,000, this being about 230,000 miles or about 90% of the total steam railway mileage; compiled by the Bureau of Railway Economics from reports furnished the Interstate Commerce Commission.

	1913-14			1914-15			1915-16		
	Revenue.	Expense.	Net.	Revenue.	Expense.	Net.	Revenue.	Expenses.	Net.
July	\$1,183	\$837	\$346	\$1,127	\$786	\$341	\$1,130	\$750	\$380
August ..	1,244	856	388	1,174	788	386	1,190	764	426
September	1,257	854	403	1,185	783	402	1,251	774	477
October ..	1,314	891	423	1,171	787	384	1,323	815	508
November	1,180	884	337	1,026	734	292	1,303	801	502
December.	1,116	821	296	993	730	263	1,253	802	451
January ..	1,021	795	226	939	718	221	1,133	798	335
February .	914	746	168	900	680	220	1,141	801	340
March	1,091	801	290	1,015	722	293	1,260	844	416
April	1,038	782	256	1,013	724	289	1,223	827	396
May	1,047	800	247	1,044	735	309	1,306	856	450
June	1,097	789	308	1,094	732	362	1,302	851	451
Fiscal year	13,483	9,801	3,682	12,678	8,915	3,763	14,818	9,684	5,134

	1916-17		
	Revenue.	Expenses.	Net.
August ..	1,418	882	536
September	1,409	881	528
October .	1,466	910	556
November	1,396	894	502
December	1,345	905	440
January ..	1,301	930	371
February ..	1,147	899	248
March ...	1,373	992	381
April	1,383	986	397
May	1,498	1,034	464

Wage Scale Averages.

Sworn averages of prices obtained by mills for shipments in months named, used in fixing wages under Amalgamated Association sliding scales.

Bar Iron.				
	1914.	1915.	1916.	1917.
Jan.-Feb.	1.1590	1.024	1.40	2.35
Mar.-April	1.176	1.087	1.60	2.45
May-June	1.1257	1.10	1.85	2.65
July-Aug.	1.0928	1.15	1.95	2.75
Sept.-Oct.	1.0847	1.15	2.00	
Nov.-Dec.	1.037	1.30	2.15	
Year's av.	1.1125	1.144	1.83	

Sheets and Tin Plates.

	Sheets.		Tin Plates.	
	1916.	1917.	1916.	1917.
Jan.-Feb.	2.25	3.40	3.50	4.95
Mar.-April ..	2.50	3.90	3.70	5.75
May-June ...	2.60	4.45	3.90	6.85
July-Aug. ...	2.70		4.05	
Sept.-Oct. ..	2.75		4.10	
Nov.-Dec. ..	2.80		4.25	
Year's av. ..	2.60		3.92	

Pig Iron Production.

Rates per annum, including charcoal pig.

May, 1916	39,800,000
June	39,500,000
July	38,350,000
August ...	39,200,000
September	39,300,000
October	41,700,000
November	40,700,000
December	37,700,000
January 1917	37,460,000
February	34,750,000
March	38,600,000
April	40,900,000
May	40,600,000
June	37,200,000
July	39,700,000
August	38,600,000
On September 1st	40,200,000

Actual production:

1910	27,303,567
1913	30,966,152
1914	23,332,244
1915	29,916,213
1916	39,434,797

Composite Steel.

Computation for September 1, 1917:

Pounds.	Group.	Price.	Extension.
2½	Bars	4.50	11.250
1½	Plates	8.00	12.000
1½	Shapes	4.50	6.750
1½	Pipe (¾×3)	5.00	7.500
1½	Wire nails	4.00	6.000
1	Sheets (28 lb.)	8.00	8.000
½	Tin plates	8.00	4.000
10 pounds			55.500
One pound			5.55

Averaged from daily quotations:

	1913.	1914.	1915.	1916.	1917.
Jan.	1.7737	1.5394	1.4554	2.1410	3.5525
Feb.	1.7625	1.5794	1.4716	2.2988	3.6529
Mar.	1.7646	1.5638	1.5098	2.5579	3.9454
April	1.7742	1.5337	1.5357	2.7165	4.1965
May	1.7786	1.5078	1.5381	2.8043	4.5272
June	1.7719	1.4750	1.5312	2.8300	5.1587
July	1.7600	1.4805	1.5692	2.8425	5.7975
Aug.	1.7400	1.5241	1.6059	2.8588	5.7161
Sept.	1.7093	1.5632	1.6506	2.9013	
Oct.	1.6779	1.5236	1.7264	2.9747	
Nov.	1.6203	1.4769	1.9089	3.2036	
Dec.	1.5556	1.4324	2.0329	3.4679	
Year	1.7241	1.5182	1.6280	2.8009	

Scrap Iron and Steel Prices.

Melting Steel. Bundled No. 1 R. R. No. 1 No. 1 Heavy
Sheet. Sheet Wrought Cast. Steel. Melt'g.
Pitts. Pitts. Pitts. Pitts. Phila. Ch'go.

Averaged from daily quotations:

1916—					
Jan.	17.75	13.40	18.00	15.10	16.30 15.60
Feb.	17.20	13.60	18.75	15.35	16.25 15.75
Mar.	18.40	14.80	19.15	15.75	17.15 16.75
Apr.	18.00	14.75	19.25	16.00	18.00 16.75
May	17.00	13.65	19.65	16.10	17.00 15.90
June	16.25	13.00	19.00	15.40	15.45 14.80
July	16.70	12.50	18.80	15.30	15.00 14.30
Aug.	16.25	11.70	18.15	15.00	15.00 15.30
Sep.	16.61	11.65	18.35	15.00	15.00 16.00
Oct.	18.25	11.65	19.30	15.80	15.65 17.35
Nov.	22.50	13.75	21.25	17.75	18.25 21.00
Dec.	25.50	16.00	27.20	21.40	23.95 23.65
Year	18.37	13.78	19.73	16.16	16.92 16.90
1917—					
Jan.	23.50	16.25	23.75	20.75	22.75 23.50
Feb.	22.50	15.75	22.50	19.75	21.15 22.25
Mar.	24.00	16.25	26.00	22.00	23.00 24.30
Apr.	27.75	17.25	30.50	24.00	25.50 27.30
May	29.25	19.25	33.00	25.25	26.50 29.00
June	40.75	24.00	40.50	32.25	34.50 38.50
July	38.75	25.35	44.00	33.50	36.00 35.50
Aug.	34.00	24.15	36.00	30.50	31.50 32.10

Composite Pig Iron.

Computation for September 1, 1917:

One ton Bessemer, valley	\$52.00
Two tons basic, valley (48.00)	96.00
One ton No. 2 foundry, valley	53.00
One ton No. 2 foundry, Philadelphia	52.75
One ton No. 2 foundry, Buffalo	50.25
One ton No. 2 foundry, Cleveland	54.30
One ton No. 2 foundry, Chicago	55.50
Two tons No. 2 Southern, foundry Cincinnati (47.90)	95.80
Total, ten tons	509.60
One ton	50.96

Averaged from daily quotations:

	1913.	1914.	1915.	1916.	1917.
Jan.	17.391	13.492	13.070	18.690	20.752
Feb.	17.140	13.721	13.079	18.564	20.946
Mar.	16.775	13.843	12.971	18.857	24.353
April	16.363	13.850	12.914	19.021	29.140
May	15.682	13.808	13.206	18.965	42.037
June	14.968	13.606	13.047	18.552	48.160
July	14.578	13.520	13.125	18.585	52.556
Aug.	14.565	13.516	14.082	18.514	51.927
Sept.	14.692	13.503	14.895	18.697	
Oct.	14.737	13.267	15.213	20.192	
Nov.	14.282	13.047	16.398	25.243	
Dec.	13.838	13.073	17.987	30.082	
Year	15.418	13.520	14.150	20.306	

Unfinished Steel and Iron Bars.

(Averaged from daily quotations.)

	Billets. Pitts.	Sheet Bars. Pitts.	Rods. Pitts.	—Iron bars, deliv.— Phila. Pitts. Ch'go.		
1916—						
Jan.	32.50†	32.50†	42.00	2.24	2.02	1.79
Feb.	34.00†	34.00†	48.00	2.41	2.25	1.92
Mar.	41.00†	41.00†	56.00	2.56	2.40	2.17
Apr.	45.00	45.00	60.00	2.62	2.50	2.35
May	43.00	43.00	59.00	2.66	2.60	2.35
June	42.00†	42.00†	58.00	2.66	2.60	2.35
July	42.50†	42.50†	58.00	2.66	2.60	2.35
Aug.	46.00	46.00	58.00	2.66	2.60	2.35
Sep.	47.00	45.00	58.00	2.66	2.70	2.35
Oct.	48.00	48.00	59.00	2.66	2.75	2.35
Nov.	52.75	54.00	65.00	2.66	2.85	2.50
Dec.	56.96	56.96	70.00	3.02	3.19	2.89
Year	44.23	44.17	57.58	2.57	2.59	2.31
1917—						
Jan.	63.50	63.50	75.00	3.16	3.25	3.00
Feb.	65.00	65.00	77.00	3.16	3.25	3.00
Mar.	68.00	68.00	79.00	3.41	3.46	3.00
Apr.	75.00	75.00	85.00	3.41	3.62	3.25
May	88.00	94.00	93.00	4.16	3.90	3.40
June	95.00	105.00	95.00	4.75	4.51	4.15
July	95.00	105.00	95.00	4.80	5.03	4.50
Aug.	84.00	94.00	92.00	4.92	5.00	4.50

† Premium for open-hearth.

Price Changes of Iron and Steel Products From February 21, 1916 to Date.

Price changes in merchant bars, structural shapes, plates, wire nails, merchant pipe, sheets and tin plates are given below, with dates. These are the commodities used in compiling our **composite finished steel**. In some cases the dates named are those upon which prominent producers announced price changes, but more frequently the rates are merely those upon which our quotations were changed. A few other price changes are included.

1916—

Feb. 21	Tin plate	3.75	to 4.00
" 29	Pipe	75% to	74%
" 29	Boiler tubes	64% to	63%
Mar. 1	Wire nails	2.30	to 2.40
" 8	Black sheets	2.60	to 2.75
" 8	Blue ann. sheets	2.65	to 2.90
" 13	Bars	2.25	to 2.35
" 13	Plates	2.35	to 2.60
" 13	Shapes	2.25	to 2.35
" 15	Steel pipe	74% to	73%
" 15	Boiler tubes	63% to	61%
" 23	Bars	2.35	to 2.50
" 23	Shapes	2.35	to 2.50
" 28	Plates	2.60	to 2.75
" 29	Sheets	2.75	to 2.85
" 29	Steel pipe	73% to	72%
" 29	Boiler tubes	61% to	60%
April 5	Sheets	2.85	to 2.90
" 15	Boiler tubes	60% to	56%
" 19	Tin plate	4.50	to 5.00
" 24	Pipe	72% to	70%
May 1	Wire nails	2.40	to 2.50
" 3	Tin plates	5.00	to 5.50
" 16	Plates	2.75	to 2.90
June 7	Galv. sheets	5.00	to 4.75
" 16	Tin plate	5.50	to 6.00
July 7	Blue ann. sheets	3.00	to 2.90
" 7	Galv. sheets	4.75	to 4.50
Aug. 1	Tin plate	6.00	to 5.50
" 7	Wire nails	2.50	to 2.60
" 15	Bars	2.50	to 2.60
" 18	Shapes	2.50	to 2.60
" 18	Plates	2.90	to 3.00
" 25	Galv. sheets	4.25	to 4.15
Sept. 7	Pipe	70% to	69%
" 7	Boiler tubes	56% to	54%
" 20	Galv. sheets	4.15	to 4.25
" 28	Sheets	2.90	to 3.00
Oct. 3	Blue ann. sheets	2.90	to 3.00
" 3	Galv. sheets	4.25	to 4.30
" 6	Sheets	3.00	to 3.10
" 7	Tin plate	5.50	to 6.00
" 13	Sheets	3.10	to 3.25
" 13	Galv. sheets	4.30	to 4.40
" 13	Tin plate	6.00	to 5.75
" 16	Galv. sheets	4.40	to 4.50

1916—

Oct. 19	Wire nails	2.60	to 2.70
" 20	Sheets	3.25	to 3.35
" 20	Blue ann. sheets	3.00	to 3.15
" 24	Plates	3.00	to 3.25
" 25	Bars	2.60	to 2.70
" 25	Shapes	2.60	to 2.70
" 25	Grooved skelp	2.35	to 2.50
" 26	Sheets	3.35	to 3.40
" 26	Galv. sheets	4.50	to 4.75
" 27	Blue ann. sheets	3.15	to 3.30
" 30	Tin plate	5.75	to 6.00
" 31	Shapes	2.70	to 2.80
Nov. 1	Boiler tubes	54% to	52%
" 6	Wire nails	2.70	to 2.85
" 8	Sheets	3.40	to 3.65
" 15	Tin plate	6.00	to 6.25
" 15	Grooved skelp	2.50	to 2.60
" 15	Pipe	69% to	68%
" 18	Galv. sheets	5.00	to 5.50
" 20	Tin plate	6.25	to 7.00
" 20	Sheets	3.65	to 4.00
" 21	Bars	2.70	to 2.90
" 21	Plates	3.25	to 3.50
" 21	Shapes	2.80	to 3.00
" 21	Blue ann. sheets	3.30	to 3.40
" 21	Boiler tubes	52% to	46%
" 25	Grooved skelp	2.60	to 2.85
" 27	Blue ann. sheets	3.40	to 3.50
" 27	Galv. sheets	5.50	to 5.75
" 27	Wire nails	2.85	to 3.00
Dec. 4	Pipe	68% to	66%
" 4	Sheets	4.00	to 4.25
1916—			
Dec. 5	Galv. sheets	5.75	to 6.00
" 6	Blue ann. sheets	3.50	to 3.85
" 11	Sheets	4.25	to 4.50
" 11	Galv. sheets	6.00	to 6.25
" 20	Tin plate	7.00	to 7.50
" 21	Bars	2.90	to 3.00
" 21	Shapes	3.00	to 3.10
" 21	Plates	3.50	to 3.60
" 26	Blue ann. sheets	3.75	to 4.00
" 30	Pipe	66% to	64%
Jan. 10	Galv. sheets	6.25	to 6.50
" 10	Blue ann. sheets	4.00	to 4.25

1917—

Jan. 16	Tin plate	7.00	to 7.50
" 30	Shapes	3.10	to 3.25
" 30	Plates	3.60	to 3.75
Feb. 6	Tin plate	7.00	to 8.00
" 14	Pipe	64%	to 62%
" 15	Sheets	4.50	to 4.75
" 16	Blue ann. sheets	4.25	to 4.50
Mar. 5	Pipe	62%	to 60%
" 8	Wire nails	3.00	to 3.20
" 8	Bars	3.00	to 3.35
" 8	Plates	3.75	to 4.50
" 8	Shapes	3.25	to 3.60
" 14	Sheets	4.75	to 5.00
" 14	Galv. sheets	6.50	to 6.75
" 20	Blue ann. sheets	4.50	to 4.75
" 20	Galv. sheets	6.75	to 7.00
Apr. 2	Tin plate	8.00	to 7.50
" 2	Pipe	60%	to 55%
" 3	Sheets	5.00	to 5.50
" 3	Blue ann. sheets	4.75	to 5.00
" 3	Galv. sheets	6.75	to 7.00
" 18	Sheets	5.50	to 6.00
" 18	Blue ann. sheets	5.00	to 5.50
" 18	Galv. sheets	7.00	to 7.50
" 20	Sheets	6.00	to 6.50
" 20	Blue ann. sheets	5.50	to 6.00
" 20	Galv. sheets	7.50	to 8.00
" 23	Wire nails	3.20	to 3.50
" 24	Bars	3.35	to 3.50
" 24	Shapes	3.60	to 4.00
" 25	Tin plate	7.50	to 8.00
May 1	Galv. sheets	8.00	to 9.00
" 3	Pipe	55%	to 49%
" 14	Bars	3.50	to 3.75
" 14	Plates	4.50	to 5.50
" 17	Sheets	6.50	to 7.00
" 17	Blue ann. sheets	6.00	to 6.50
" 18	Galv. sheets	8.00	to 8.50
" 18	Blue ann. sheets	6.50	to 7.00
" 18	Galv. sheets	8.50	to 9.25
June 7	Plates	5.50	to 7.00
" 8	Shapes	4.00	to 4.25
" 8	Galv. sheets	9.25	to 9.50
" 13	Sheets	7.00	to 7.50
" 13	Blue ann. sheets	7.00	to 7.50
" 15	Bars	3.75	to 4.00
" 18	Plates	7.00	to 8.00
" 19	Wire nails	3.50	to 4.00
" 20	Sheets	7.50	to 8.00
" 25	Bars	4.00	to 4.50
" 25	Shapes	4.25	to 4.50
" 25	Galv. sheets	9.50	to 10.00
" 28	Plates	8.00	to 9.00
" 29	Blue ann. sheets	7.50	to 8.00
July 2	Pipe	49%	to 42%
Aug. 8	Pipe	42%	to 49%
" 31	Plates	9.00	to 8.00

Steel Making Pig Iron Averages.

Bessemer and basic pig iron averages compiled by Messrs. W. P. Snyder & Company from sales in the valley market of 1,000 tons and over.

	Bessemer.		Basic.	
	1916.	1917.	1916.	1917.
Jan. ...	\$20.645	\$35.00	\$17.833	\$30.00
Feb. ..	20.2136	35.418	17.984	30.00
Mar. ..	20.8625	36.423	18.25	32.537
April ..	20.70	41.332	18.00	37.986
May ..	20.833	45.9917	18.1607	41.8947
June ..	21.00	53.266	18.00	40.110
July ...	21.00	56.50	18.00	52.848
Aug. ...	21.00	53.221	18.00	49.422
Sept. ...	21.9346		18.63	
Oct. ...	23.6576		20.3086	
Nov. ...	29.12		27.229	
Dec. ...	34.213		30.00	
Year ..	22.9316		20.0329	

Above prices are f. o. b. valley furnace; delivered Pittsburgh is 95 cents higher.

British Iron And Steel Exports.

	Pig Iron.	Rails.	Tin Plate.	Totals.*
1912 ..	1,262,383	407,175	481,123	4,933,112
1913 ..	1,124,181	500,117	494,497	5,049,090
1914 ..	780,763	433,507	435,392	3,972,348
1915 ..	611,227	342,267	368,778	3,248,046
1916 ..	917,396	50,275	321,710	3,357,829
1916—				
June ..	77,487	3,243	30,351	310,625
July ...	69,999	3,485	38,174	298,929
Aug. ...	95,655	1,983	34,124	319,928
Sept. ...	72,683	2,712	19,226	231,335
Oct. ...	72,187	6,929	10,929	241,261
Nov. ...	49,986	16,411	4,571	224,554
Dec. ...	48,542	2,317	14,248	158,609
1917—				
Jan. ...	61,201	5,935	16,515	210,124
Feb. ...	59,970	851	11,069	186,308
Mar. ...	79,694	6,084	38,057	239,965
April ...	57,738	2,659	16,863	180,869
May ...	68,201	1,680	18,290	199,418
June ...	86,793	2,453	18,975	220,304
July ...	74,091	4,734	18,941	268,190
7 mos. ...	487,688	24,403	116,534	1,505,180

* Includes scrap, pig iron, rolled iron and steel, cast and wrought iron manufactures, bolts, nuts, etc., but not finished machinery, boilers, tools, etc.

Iron and Steel Imports and Exports.

Value of Tonnage and Non-Tonnage.

	1912.	1913.	1914.	1915.	1916.	1917.
January	\$18,451,914	\$25,141,409	\$16,706,836	\$18,053,421	\$51,643,807	\$108,423,640
February	21,801,570	24,089,871	16,520,260	16,470,751	54,145,496	85,117,010
March	24,474,799	27,221,210	20,551,137	20,985,505	58,266,144	111,164,876
April	26,789,853	27,123,044	20,639,569	25,302,649	58,655,447	102,560,345
May	28,050,247	26,718,970	19,734,045	26,536,612	72,926,180	107,362,635
June	24,795,802	25,228,346	18,927,958	31,730,132	76,257,844	119,141,826
July	24,917,952	24,170,704	16,737,552	35,892,106	70,745,162	
August	25,450,107	23,947,440	10,428,817	37,726,657	86,296,703	
September ...	23,286,040	22,831,082	12,531,102	38,522,175	90,895,592	
October	25,271,559	25,193,887	16,455,832	43,299,457	82,010,972	
November	26,406,425	20,142,141	15,689,401	48,056,220	77,570,840	
December	23,750,864	22,115,701	14,939,613	45,825,147	88,536,958	
Totals	\$289,128,420	\$293,934,160	\$199,861,684	\$388,400,832	\$867,323,044	\$633,670,342

Exports of Tonnage Lines,---Gross Tons.

	1910.	1911.	1912.	1913.	1914.	1915.	1916.	1917.
January	118,681	152,362	151,575	249,493	118,770	140,550	357,122	608,286
February	110,224	150,919	204,969	241,888	121,206	139,946	368,981	449,107
March	124,980	216,360	218,219	257,519	159,998	174,104	438,656	606,563
April	117,921	228,149	267,313	259,689	161,952	223,587	384,796	521,179
May	135,306	178,589	307,656	242,353	139,107	263,113	538,651	588,515
June	120,601	174,247	273,188	243,108	144,539	356,431	526,772	631,712
July	127,578	162,855	272,778	237,159	114,790	380,336	503,685	
August	131,391	177,902	282,645	209,856	86,599	405,952	597,750	
September	119,155	181,150	248,613	213,057	96,476	382,118	643,767	
October	129,828	186,457	251,411	220,550	147,293	349,848	610,125	
November	155,138	187,554	233,342	175,961	140,731	362,766	554,859	
December	150,102	190,854	235,959	181,715	117,827	353,856	580,961	
Totals	1,540,895	2,187,724	2,947,596	2,745,535	1,549,554	3,532,606	6,110,790	3,405,362

Iron Ore Imports.

	1914.	1915.	1916.	1917.
Jan. .	101,804	75,286	89,844	97,440
Feb. .	112,574	78,773	94,315	86,314
Mar. .	68,549	88,402	93,383	95,989
April .	111,812	91,561	75,712	58,878
May .	125,659	98,974	148,599	66,762
June .	188,647	118,575	134,154	
July .	141,838	119,468	156,755	
Aug. .	134,913	126,806	127,094	
Sept. .	109,176	173,253	109,747	
Oct. .	114,341	138,318	95,833	
Nov. .	90,222	113,544	82,257	
Dec. .	51,053	118,321	118,043	
Totals	1,350,588	1,341,281	1,325,736	405,383

Iron and Steel Imports.

	1913.	1914.	1915.	1916.	1917.
Jan. .	21,740	17,776	10,568	15,824	39,991
Feb. .	25,505	14,757	7,506	20,279	24,380
Mar. .	27,467	27,829	8,025	15,159	37,280
April .	25,742	30,585	16,565	20,175	48,055
May .	28,728	28,173	28,916	32,113	26,037
June .	36,597	23,076	32,200	26,886	28,421
July .	36,694	25,282	20,858	14,774	
Aug. .	18,740	28,768	27,557	32,257	
Sept. .	19,941	38,420	23,344	25,558	
Oct. .	20,840	22,754	34,319	30,170	
Nov. .	25,809	24,165	36,931	42,544	
Dec. .	26,454	9,493	35,409	44,133	
Total	317,260	289,778	282,443	275,743	204,164

Immigration Statistics.

Years mentioned refer to fiscal years ended June 30th. Aliens admitted include immigrant and non-immigrant, aliens departed include emigrant and non-emigrant.

Excess Arrivals Over Departures.

	Aliens.	Citizens.	Total.
1913	815,303	*61,098	754,205
1914	769,276	*82,211	687,065
1915	50,070	67,167	117,237
1916	125,941	11,197	137,138
1917	216,498	1,409	217,907

July, 1915 ...	11,082	3,912	14,994
August	*14,324	*804	*15,128
September ...	*1,965	866	*1,099
October	4,877	662	5,539
November ..	3,292	*802	2,490
December ..	*570	*891	*1,461
January, 1916	7,303	*1,212	6,091
February	19,420	*1,826	17,594
March	23,791	4,198	27,989
April	26,143	4,471	30,614
May	24,708	2,021	26,729
June	22,184	65	22,249

July	19,244	3,634	21,878
August	21,413	304	21,717
September ...	29,310	1,443	30,753
October	28,339	*2,012	26,327
November ...	24,241	*183	24,058
December ..	18,791	*252	18,539
January, 1917	19,563	*1,790	17,773
February	14,145	*1,612	13,103
March	14,125	2,591	16,716
April	18,821	4,709	23,530
May	5,313	*7,525	*2,212
June	3,593	2,132	5,725

June 1917.

Immigrant aliens in	11,095
Non-immigrants in	5,049
Total aliens in	16,144

Emigrant aliens out	7,462
Non-emigrant aliens out	5,089
Total aliens out	12,551

Citizens in	11,793
Citizens out	9,661
Excess citizens in	2,132

Change in population:

Aliens	+3,593
Citizens	+2,132
Net change	+5,725

* Excess of departures.

Our Foreign Trade.

Value of merchandise imports and exports and favorable trade balance, calendar years.

	Imports.	Exports.	Balance.
1906	1,320,501,572	1,798,243,434	477,741,862
1907	1,424,169,820	1,923,426,205	500,256,385
1908	1,116,374,087	1,752,835,447	636,461,360
1909	1,475,520,724	1,728,198,645	252,677,921
1910	1,562,504,151	1,866,258,904	303,354,753
1911	1,532,359,160	2,092,526,746	560,167,586
1912	1,818,133,355	2,399,217,993	581,084,638
1913	1,792,596,480	2,848,018,292	691,421,812
1914	1,789,276,001	2,113,624,050	324,348,049
1915	1,778,596,695	3,554,670,847	1,776,074,152
1916	*2,391,654,335	*5,481,423,589	*3,089,769,254

1914—

July	150,677,291	154,138,947	†5,538,344
Aug.	129,767,890	110,367,494	†19,400,396
Sept.	139,710,611	156,052,333	16,341,722
Oct.	137,978,778	195,283,852	57,305,074
Nov.	126,467,062	205,878,333	79,411,271
Dec.	114,656,545	245,632,558	130,976,013

1915—

Jan.	122,148,317	267,879,313	145,730,996
Feb.	125,123,391	298,727,757	173,604,366
Mar.	158,022,016	296,501,852	138,479,836
Apr.	160,576,106	294,745,913	134,169,807
May	142,284,851	273,769,093	131,484,242
June	157,695,140	268,547,416	110,852,276
July	143,099,620	267,978,990	124,879,370
Aug.	141,830,202	261,025,230	119,195,028
Sept.	151,236,026	300,676,822	149,440,796
Oct.	149,172,729	336,452,009	186,979,289
Nov.	155,496,675	327,670,353	172,173,678
Dec.	171,832,505	359,306,492	187,473,987

1916—

Jan.	184,350,942	330,036,410	145,685,468
Feb.	193,935,117	402,991,118	209,056,001
Mar.	213,589,785	410,742,034	197,152,249
Apr.	218,236,397	398,568,532	180,332,135
May	229,188,957	474,803,637	245,614,680
June	245,795,438	464,784,318	218,988,880
July	182,722,938	445,472,000	262,749,062
Aug.	199,247,391	509,778,680	310,531,289
Sept.	164,038,614	515,007,408	350,968,794
Oct.	178,658,730	492,813,918	314,155,188
Nov.	176,988,305	516,976,359	339,988,054
Dec.	204,834,188	521,650,904	316,816,716

1917—

Jan.	241,707,282	*613,555,693	*371,848,411
Feb.	199,479,996	467,683,406	268,203,410
Mar.	270,218,139	553,988,239	283,770,100
Apr.	253,916,966	530,252,295	276,335,329
May	280,706,164	552,795,022	272,088,858
June	*306,624,000	575,209,000	272,585,000

* High record. † Balance unfavorable.

Tin Plate Movement.

United States imports and exports of tin plate in gross tons have been as follows, the imports of course including those for drawback purposes:

	Imports.	Exports.
1906	56,983	12,082
1907	57,773	10,293
1908	58,490	11,878
1909	62,592	9,327
1910	66,640	12,459
1911	14,098	61,466
1912	2,053	81,694
1913	20,680	57,812
1914	15,411	59,549
1915	2,350	154,642
1916	1,008	227,391
January, 1916	62	12,178
February	107	13,534
March	44	20,363
April	179	21,385
May	39	25,585
June	91	29,751
July	150	18,760
August	105	18,757
September	51	18,770
October	111	14,195
November	38	15,816
December	34	18,229
January, 1917	31	23,408
February	35	14,632
March	21	21,680
April	34	19,936
May	2	23,283
June	2	25,460

The New Devices Co., Newark, N. J., has been incorporated with a capital of \$10,000 to manufacture vacuum cleaners, etc. B. N. Bishop and Richard Deubich, Newark, and Louis Caper, Plainfield, N. J., are the incorporators.

The Sotter Brass Foundry Co., Pittsburgh, Pa., has recently been organized and is prepared to furnish all kinds of brass, bronze and aluminum castings also different grades of babbitt metal.

The Fort Smith Metal Products Co., Fort Smith, Ark., has increased its capital from \$50,000 to \$100,000, and will install additional metal-working equipment.

Car and Locomotive Buying.

Freight Cars Ordered.

1915: Domestic	105,000	
Export	20,000	
1916: Domestic	165,000	
Export	29,000	
Total, 1916		194,000
1917: Domestic	43,353	
Export	29,800	
U. S. Ry. in France	12,997	
January	16,840	
February	19,566	
March	9,687	
April	1,772	
May	12,298	
June	6,055	
Six months		66,218
July	5,670	
August	13,262	

Locomotives Ordered.

1915: Domestic	1,500	
Export	800	
1916: Domestic	2,850	
Export	2,900	
Total, 1916		5,750
1917: Domestic	1,987	
Export	1,600	
U. S. Ry. in France	1,164	
January	807	
February	299	
March	232	
April	339	
May	1,276	
June	575	
Six months		3,528
July	448	
August	775	

STRUCTURAL STEEL LETTINGS

Reports of the Bridge Builders' and Structural Society, lettings of structural steel contracts by months in percentage of the fabricating capacity, capacity being now about 180,000 tons a month.

	1914.	1915.	1916.	1917.
January	62	25	69	61½
February	63	30	75	59
March	76	64	102	68
April	88	62½	72½	61
May	57	61	80	56½
June	56½	80	58	47½
July	68	86	47½	41½
August	27½	85	64	
September ..	38½	67	52½	
October	35	78	77	
November ..	20	105	78	
December ...	35	121	86	
Average ..	52¼	72	71¾	

Copper in August.

Market Practically at Standstill Pending Definite Governmental Action on Price-Fixing Policy—Continued Labor Troubles Cause Further Serious Curtailment in Production—Industry Placed Under Government Control—Net Decline for Month 2c to 3c Per Pound.

Business in the copper industry in August, notwithstanding the fresh impetus apparent in the renewed and numerous inquiries at the close of July with slightly advanced prices—was almost at a standstill, pending definite information concerning the Government's price-fixing policy and because of continued and renewed labor difficulties at mines and smelters in the various districts and also at refineries. No sooner had disturbances in the Alaska and Lake districts been settled than a fresh outbreak occurred at Butte which caused the closing of mines and smelters and also the Great Falls refinery. Anaconda plants were closed and output seriously curtailed, August production being estimated at 175,000,000 pounds. July estimated refined output was 200,000,000 pounds. Domestic consumption during the month was at low tide.

Rumor Market Active.

Exports in August from all ports were estimated at 30,000 tons, a decrease of 30% as compared with the June tonnage—43,000 tons including Canada—but 5,000 tons greater than the July estimate of 25,000 tons. Official reports of exports to Canada have not yet been made for June or July. Casting copper, because of scarcity and continued active demand for the manufacture of machinery and other war munitions, came into prominence when prices advanced to the level of those quoted for prompt Electrolytic during the greater part of the month. Lake producers withdrew from the market early in the month and prices remained nominal. Speculations and rumors as to what price would be determined upon by the Government were many and various but continued to range from 18c to 25c per pound with the preponderance of opinion leaning to 22.50c at the close of the month when the matter was still officially unannounced.

A generally weaker tendency was noted as the month progressed and prices declined from 29.50c for prompt Lake, 28.50 to 29.00c for prompt Electrolytic, 27.50 to 28.00c for Casting, 27.75 to 28.00c for September Electrolytic, 27.25 to 27.75c for October and 26.50 to 27.00c for fourth quarter at the beginning of the month, to 27.00 to 28.00c for prompt Lake, 25.50 to 26.00c for prompt Electrolytic, 25.00 to 26.00c for Casting, 25.00 to 25.50c for October Electrolytic and 24.50 to 25.00c for November, with fourth quarter position 24.00 to 25.00c. The total decline for the month was two to three cents per pound.

Late in the month, copper was placed under control of the Government and the Export Council, beginning with August 30th, will issue permits for all exports, which must be made according to strict regulations.

Market Dull; Prices Nominal.

Early in the month, the interest noted in the numerous inquiries from consumers during the last few days of July ceased and dullness with receding prices for all positions of Electrolytic copper set in. Lake copper producers reported that they were out of the market and prices were merely nominal. Casting copper makers were also out of the market while the demand was very active; prices advanced by August 2nd to the level of prompt Electrolytic 28.00 to 28.50c per pound. The scarcity was marked and refineries claimed to be sold up, consumers being dependent upon scrap copper, ingot brass and second hand lots. A few sales of 100-ton lots Electrolytic were made but with the belief growing that the Government investigation into the cost of production would be necessarily prolonged, business was practically suspended while the trade awaited the decision anxiously with prices receding.

Labor Troubles.

By the 7th. labor trouble at Butte again developed just as the Kennebec Copper Corporation reported the Alaska difficulties settled—the miners having been out on strike since June 16th. Reports of large orders from our Allies about this time were not verified and it was pointed out that such purchases would necessarily have to be made through the Council of Defense. By the close of the first fortnight, Casting copper was easier and one cent under Electrolytic. In the absence of any important business and with some pressure to sell by second hands the market became unsettled and prices were down to 26.75 to 27.25c for prompt and August Electrolytic, 26.50 to 27.00c for September, 26.00 to 26.50c for October and 25.00 to 26.00c for fourth quarter position.

Eugene V. Meyer Appointed Copper Administrator.

Various rumors concerning copper continued from day-to-day and the market held remarkably steady and quiet under their influence. The London official price on August 20th, dropped £5 to £120 for spot Standard and to £119 for futures, American Electrolytic remaining unchanged at £137 for spot and £133 for futures. Casting copper was again very scarce and advancing in price while Electrolytic declined, with domestic consumers buying only small lots for mandatory requirements. On the 28th, the President's proclamation placed copper under the control of the Export Council, to go into effect August 30th, and the

Butte mines were closed with conditions in the Globe-Miami district improved. Eugene V. Meyer, long connected with the Guggenheims, was appointed copper administrator to take charge of copper purchases for the War Industries Board under Mr. B. M. Baruch. The month closed without new developments, the market being dull and easy.

Copper Prices in August.

— New York —				London.		
	Lake.	Electro.	Casting.	Standard.		
Day.	Cents.	Cents.	Cents.	£	s	d
1	29.75	28.75	27.75	125	0	0
2	29.75	28.50	28.25	125	0	0
3	29.75	28.25	28.25	125	0	0
6	29.75	28.25	28.25	125	0	0
7	29.75	28.25	28.25	125	0	0
8	29.50	28.00	27.50	125	0	0
9	29.50	27.75	27.00	125	0	0
10	29.00	27.25	26.50	125	0	0
13	29.00	27.25	26.25	125	0	0
14	29.00	27.00	26.00	125	0	0
15	29.00	27.00	26.25	125	0	0
16	29.00	27.00	26.25	125	0	0
17	29.00	27.00	26.25	125	0	0
20	29.00	27.00	26.25	120	0	0
21	29.00	27.00	26.25	120	0	0
22	29.00	27.00	26.25	120	0	0
23	27.50	26.25	25.75	120	0	0
24	27.50	26.25	25.75	120	0	0
27	27.50	26.25	25.75	120	0	0
28	27.50	26.25	25.75	120	0	0
29	27.50	26.25	25.75	120	0	0
30	27.50	25.75	25.50	120	0	0
31	27.50	25.75	25.50	120	0	0
High	30.00	29.00	28.50	125	0	0
Low	27.00	25.50	25.00	120	0	0
Average	28.75	27.13	26.58	122	14	6

Lake Copper Prices.

Monthly average prices of Lake Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.89	14.76	13.89	24.10	29.83
Feb.	15.37½	14.98	14.72½	27.44	34.04½
Mar.	14.96	14.72	15.11	27.42	35.33
Apr.	15.55	14.68	17.43	28.91½	32.46
May	15.73	14.44	18.81	29.28½	31.90
June	15.08	14.15	19.92	27.44	31.35
July	14.77	13.73	19.42	25.81	29.79
Aug.	15.79	12.68	17.47	26.58	28.75
Sept.	16.72	12.43½	17.76	27.86	
Oct.	16.81	11.66	17.92½	28.37½	
Nov.	15.90	11.93	18.86	31.71	
Dec.	14.82	13.16	20.37½	33.07½	
Av.	15.70	13.61	17.64	28.17	

Electrolytic Copper Prices.

Monthly average prices of Electrolytic Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.75½	14.45	13.71	24.10	30.26
Feb.	15.27	14.67	14.57	27.46	35.22
Mar.	14.92½	14.33½	14.96	27.44	35.74
Apr.	15.48	14.34	17.09	29.31	32.19
May	15.63	14.13	18.60	29.81	32.32
June	14.85	13.81	19.71	27.49½	32.57
July	14.57	13.49	19.08	25.60	28.90
Aug.	15.68	12.41½	17.22	27.36½	27.13
Sept.	16.55	12.08½	17.70½	28.26	
Oct.	16.54	11.40	17.86	28.64	
Nov.	15.47	11.74	18.83	32.22½	
Dec.	14.47	12.93	20.35	33.84	
Av.	15.52	13.31½	17.47	28.46	

Casting Copper Prices.

Monthly average prices of Casting Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.57	14.27½	13.52	23.06½	28.04½
Feb.	15.14	14.48	14.17	26.03	31.73½
Mar.	14.76	14.18	14.34	25.90	32.18
Apr.	15.39	14.18	16.48	27.16	29.24
May	15.45½	14.00	17.41	27.37	30.11
June	14.72	13.65	18.74½	25.10	30.36
July	14.40½	13.34½	17.76½	23.61	27.59
Aug.	15.50	12.27	16.46	24.67	26.58
Sept.	16.37½	12.00	16.75	25.93	
Oct.	16.33	11.29	17.32	27.17	
Nov.	15.19	11.63	18.41	30.37½	
Dec.	14.22	12.83½	19.73	31.74	
Av.	15.33	13.18	16.76	26.51	

Sheet Copper Price Changes.

The changes in the base price of sheet copper since April 13, 1916 are given below, with price of Lake copper on the same date.

1916—	Sheet Copper.	Lake Copper.
April 13	35.50	29.25
April 26	36.50	29.75
May 9	37.50	30.00
August 1	35.50	25.50
August 19	36.00	27.00
September 27	37.00	28.25
November 14	40.00	31.75
November 20	41.00	33.75
December 5	42.00	34.00
1917—		
February 19	44.00	35.25
April 10	42.00	33.75
April 23	40.00	30.75
June 11	38.00	31.50
June 19	39.00	31.50
June 20	38.00	28.50
July 26	36.00	29.00

Waterbury Copper Averages.

	1913.	1914.	1915.	1916.	1917.
Jan.	17.00	14.75	14.12½	24.75	32.25
Feb.	15.50	15.12½	15.25	27.75	35.25
Mar.	15.12½	15.00	15.75	28.00	35.50
Apr.	15.75	14.87½	18.50	29.00	32.75
May	15.87½	14.75	22.50	29.87½	32.00
June	15.37½	14.37½	22.50	28.25	32.50
July	14.75	14.12½	22.25	27.25	30.87½
Aug.	15.62½	13.00	19.50	27.00	29.00
Sept.	16.87½	12.87½	18.50	28.00	
Oct.	16.87½	12.25	18.25	28.87½	
Nov.	16.25	12.25	19.37½	33.25	
Dec.	15.00	13.50	20.75	34.25	
Av.	15.83	13.91	18.94	28.85½	

Exports of Copper From the United States.

(In tons of 2,240 lbs.)

	1914.	1915.	1916.	1917.
January ..	36,018	26,193	23,663	51,322
February ..	34,634	15,583	20,648	32,263
March	46,504	30,148	26,321	51,218
April	35,079	18,738	21,654	49,536
May	32,077	28,889	16,062	49,245
June	35,182	16,976	39,595	39,816
July	34,145	17,708	35,066	21,610
August ..	16,509	17,551	32,190	
September ..	19,402	14,877	29,803	
October ..	23,514	24,087	33,224	
November ..	24,999	23,168	22,598	
December ..	22,166	42,426	26,486	
Totals ..	360,229	276,344	327,310	

Tin in August.

Delayed Cables, Acuteness of Ocean Freight Situation and Uncertainty Regarding Government Action and Its Effect on Future Business Conditions the Main Retarding Influences Throughout August—Grades Other Than Straits Becoming Increasingly Popular—Net Decline for Month $\frac{3}{8}$ c Per Pound.

Like all other metal markets in August, the tin trade was affected adversely through sentiment, by the continued and prolonged uncertainty which now pervades the commerce of the entire country in regard to Government action in its effect upon future business conditions. In tin circles the most potent factor retarding business was in the delayed foreign cables due to the censorship through which they must pass, first, on the other side of the Atlantic and then on this. Frequently cables were received late in the day and sometimes were absent for several days at a time. The acuteness of the ocean freight situation and the difficulties encountered in meeting the strict shipping regulations were scarcely less important in effect upon prices, being held responsible for several declines.

Because of these things which influenced Straits tin particularly, was due the prominence of other kinds of tin, No. 1 Chinese and Banca—for spot and nearby delivery—which were in active demand and ample supply, the former selling as high as 56 to 57c per pound at one time and the latter at 60.50c per pound. The highest price for Straits tin was 64c early in the month and the lowest August 27th, 61.50c, followed by an advance to 61.87 $\frac{1}{2}$ c by August 31st, and which made the net recession 3 $\frac{1}{8}$ c.

Official information from the Tin Committee of the Iron and Steel Institute was not forthcoming during the month but favorable progress is believed to have been made particularly in regard to Dr. Pratt's ideas regulating importations which will grant permits to the American consumers instead of to the London importer or Singapore operator. A shortage of tin plate according to the Government's present figures, amounting to 2,000,000 base boxes—including coke andterne plate—is expected by the end of 1917 be-

cause of the increased demand for packing perishable foods and a further limitation of sales was made.

Statistics for the first seven months of 1917 showed the total visible supply on July 31st, to be 17,544 tons, a decrease of 860 tons as compared with the same period 1916. Total deliveries including Pacific ports were 37,244 tons against 36,053 tons a year ago, an increase of 1,911 tons. Total arrivals at Atlantic to August 20th inclusive, were 2,520 tons with 3,440 tons reported afloat.

The foreign market fluctuated within a wide range from £248 10s for spot Straits; £247 10s for spot Standard; £243 10s for future Standard on August 1st, to £245 10s for spot Straits;

Tin Prices in August.

Day.	New York.	London.		
	Cents.	£	s	d
1	64.00	247	10	0
2	64.00	247	0	0
3	63.62 $\frac{1}{2}$	246	0	0
6	63.75	...	...	...
7	63.62 $\frac{1}{2}$	246	0	0
8	63.87 $\frac{1}{2}$	247	0	0
9	63.75	247	5	0
10	63.12 $\frac{1}{2}$	244	5	0
13	62.75	242	10	0
14	62.62 $\frac{1}{2}$	242	5	0
15	62.75	244	0	0
16	62.75	244	15	0
17	62.62 $\frac{1}{2}$	244	0	0
20	62.37 $\frac{1}{2}$	243	0	0
21	62.12 $\frac{1}{2}$	242	10	0
22	61.87 $\frac{1}{2}$	242	0	0
23	61.75	241	10	0
24	61.75	240	15	0
27	61.50	240	0	0
28	61.75	241	10	0
29	61.62 $\frac{1}{2}$	242	10	0
30	61.87 $\frac{1}{2}$	244	0	0
31	61.87 $\frac{1}{2}$	244	10	0
High	64.00	247	10	0
Low	61.50	240	0	0
Average	62.685	243	17	1

Visible Supplies.

Visible supplies of tin at end of each month:

	1913.	1914.	1915.	1916.	1917.
Jan.	13,971	16,244	13,901	17,041	18,169
Feb.	12,304	17,308	14,548	16,511	19,627
Mar.	11,132	16,989	15,467	18,782	20,307
April	9,822	15,447	15,785	19,739	18,047
May	13,710	17,862	14,646	19,614	19,404
June	11,101	16,027	15,927	19,363	18,059
July	12,063	14,167	16,084	18,404	17,544
Aug.	11,261	14,452	15,127	18,042	20,353
Sept.	12,943	14,613	15,191	16,192	
Oct.	11,857	10,894	13,154	17,415	
Nov.	14,470	11,483	16,451	21,186	
Dec.	13,893	13,906	16,216	20,737	
Av'ge	12,377	14,907	15,208	18,585	

Shipments From the Straits.

Monthly shipments of tin from the Straits Settlements to Europe and United States:

	1913.	1914.	1915.	1916.	1917.
Jan.	6,050	5,290	5,200	6,095	4,815
Feb.	4,660	6,520	5,584	6,250	6,255
Mar.	4,810	4,120	4,970	5,170	5,134
April	4,400	4,930	5,270	4,685	4,393
May	6,160	6,900	6,759	3,965	6,866
June	4,280	5,870	6,665	6,210	4,723
July	4,770	4,975	5,606	5,410	4,410
Aug.	6,030	3,315	4,712	4,526	5,770
Sept.	5,160	4,973	5,296	3,270	
Oct.	5,020	4,610	4,441	5,868	
Nov.	5,560	5,155	6,713	5,380	
Dec.	5,110	6,435	5,301	4,758	
Total	62,550	63,093	66,517	61,587	
Av'ge.	5,213	5,258	5,543	5,132	

Consumption In the U. S.

Monthly deliveries of tin in the United States exclusive of Pacific Coast:

	1913.	1914.	1915.	1916.*	1917.*
Jan.	3,700	3,600	2,300	4,452	7,177
Feb.	3,500	3,300	3,375	6,388	3,930
Mar.	5,900	4,450	3,200	4,726	4,800
April	3,450	4,300	3,200	4,202	4,380
May	3,350	3,800	5,600	5,455	5,749
June	3,800	3,650	3,900	6,398	6,398
July	3,900	3,900	5,300	4,432	4,806
Aug.	3,600	2,900	4,500	4,335	3,305
Sept.	3,100	3,600	4,300	4,025	
Oct.	3,700	3,700	4,900	4,556	
Nov.	2,800	2,600	2,975	3,165	
Dec.	3,100	1,900	5,200	4,082	
Total	43,900	41,700	48,750	56,216	
Av'ge.	3,658	3,475	4,062	4,685	

Tin Statistics.

Compiled by New York Metal Exchange.

(Tons of 2,240 lbs.)

Shipment during	Aug. 1917.	July. 1917.	Aug. 1916.
Straits			
To Gt. Britain .	3,195	1,465	2,370
" Continent ..	550	245	666
" U. S.	2,025	2,700	1,490
Total from Straits	5,770	4,410	4,526
Total from Australia			63
Consumption			
London deliveries	932	1,118	1,287
Holland deliveries	95	67	92
U. S.	3,305	4,806	4,335
Total	4,332	5,991	5,714

Stocks at close of month

In London—

Straits, Australian	3,804	3,388	2,876
Other kinds ...	964	744	1,260
In Holland			
In U. S.	2,092	1,722	4,756

Total	6,860	5,854	8,892
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Afloat—

London	4,973	4,123	3,530
Banca & Billiton	2,420	2,107	1,230
U. S.	6,100	5,460	4,390

Total afloat

close of month .	13,493	11,690	9,150
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Total visible supply	Aug. 31, 1917.	July 31, 1917.	Aug. 31, 1916.
	20,353	17,544	18,042

Straits Tin Prices In New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	50.45	37.74	34.30	41.88	44.19
Feb.	48.73	39.93	37.32	42.63	51.37
Mar.	46.88	38.08	49.93½	50.42	54.36
Apr.	49.12	36.10	47.98	51.75	55.91
May	49.14	33.30	38.78	49.15	63.29½
June	44.93	30.65	40.37	42.17	62.09
July	40.39	31.75	37.50	38.46	62.61
Aug.	41.72	50.59½	43.39	38.54	62.68½
Sept.	42.47	32.79	33.13	38.70½	
Oct.	40.50	30.39½	33.08	41.16	
Nov.	39.81	33.50	39.37½	44.17	
Dec.	37.64	33.60	38.75	42.66½	
Year	44.32	35.70	38.66	43.48	

£244 c.i.f. London from Singapore: £244 10s for spot Standard and £243 5s for future Standard on the closing day of the month.

Market Opens Firm and Higher.

The month opened with an advance of $\frac{1}{4}$ c from the July closing to 64c but business transacted was not large in volume. Banca and No. 1 Chinese, however, were in active demand, the former at 61c and the latter at 55c. An acute aggravation of the difficulties in the freight situation and shipping regulations were held responsible for the decline that followed a few days later. Straits to 63.62 $\frac{1}{2}$ c. Banca to 60c and No. 1 Chinese to 54.50c. Interest continued in other brands than Straits as the month progressed and No. 1 Chinese advanced to 56c on August 8th, also Lamb & Flagg tin; Banca was 60.50c and a large amount of business was transacted in various deliveries of the three kinds, while trading in Straits was within narrow limits but prices were up $\frac{1}{8}$ c to 63.87 $\frac{1}{2}$ c.

No Duty on Tin.

On August 9th, the Senate reported to have revised the revenue bill eliminating the 10% duty on articles on the free list—including tin—thereby removing the possibility of a duty on the metal. The absence of trading in future positions was noted; offerings of

January-February-March were made at 57.50 to 57.75c but buyers were not responsive. By the close of the first fortnight it was understood that the larger consumers were not buying future shipments because the efforts of the Tin Committee were expected to result in a reduction of several cents per pound in prices.

In the third week, the effect of the Government's price-fixing policy, which had paralyzed business in other metals, was felt, notwithstanding the fact that pig tin is not subject to such control. A halt in transactions was very apparent and a further decline to 62.12 $\frac{1}{2}$ c was noted on August 21st. Future positions of any kind of tin continued very difficult to obtain, this being an unusual condition. In the absence of foreign cables and the continued lack of buying interest prices receded to 61.50c, the lowest point of the month, on August 27th, after which, in sympathy with higher cables from London there was an advance to 61.87 $\frac{1}{2}$ c for spot on the last day, with Sept. 61.00c, Oct. 59.50c, Nov. 58.75c, Dec. 57.75c, and Jan. 57.00c to 57.25c per pound. Banca had become very scarce, 59.25 to 59.50c being the asking price. Chinese on spot was also short, but wholesale lots for September shipment from China were sold for 54.50c per pound.

Spelter in August.

**Continued Uncertainty Owing to Government's Price-Fixing Program—
Market Very Unsettled With Business Restricted—Government Buys
11,500,000 Pounds Grade "C" Spelter—Geological Survey's Re-
port Unfavorable—Net Decline for the Month $\frac{1}{2}$ c Per Pound.**

The uncertainty that has pervaded all metal markets since Government's price-fixing policy was announced and which has restricted business in all metals, was the dominating factor in the spelter industry during August. Transactions were within narrow limits and the market was unsettled; prices were nominal and erratic after the first week, depending largely upon the sentiment of dealer and buyer. Business was not in sufficient volume to establish firm quotations. Exports practically ceased more than four months ago but the trade believed that both foreign and domestic buying must from necessity be resumed before long.

The Government purchase of 11,500,000 pounds of selected spelter, grade C, a better quality than ordinary prime Western for 8.75 to 9.00c per pound f.o.b. East St. Louis was the most prominent feature of the month. It was followed by a fractional advance, which, however, was almost immediately lost when the preliminary report of the United States Geological Survey was published, showing unfavorable conditions.

Prices for prompt metal receded to 7.92 $\frac{1}{2}$ c to 8.30c New York, 7.75 to 8.12 $\frac{1}{2}$ c East St. Louis at the lowest point on August 27 after which there was a recovery to 8.17 $\frac{1}{2}$ c New York, 8.00c East St. Louis for prompt on the last day. The net decline for the month was $\frac{1}{2}$ c per pound.

L. H. Haney Investigating Production Costs.

Current business at the beginning of the month was transacted at 8.50c East St. Louis, 8.67 $\frac{1}{2}$ c New York, in small amounts; brass special selling at 9.00 to 9.25c East St. Louis. Some surprise was expressed in regard to the Government's change of method in buying grade C in the open market by asking for bids instead of by fixing a price as in the case of grades A and B and re-

ceiving offerings, as was done in the July purchase. The Government buying stimulated trading which was active the next day at fractionally higher figures, 8.50 to 8.62 $\frac{1}{2}$ c E. St. Louis. Dr. L. H. Haney was placed in charge of the Government investigation regarding cost of producing spelter—copper, lead and antimony are also in his hands. It was pointed out that until the probable amount of spelter required by our Allies as well as by the United States was known that it would be difficult to fix the costs of production because what would be a fair price for 500,000 tons a year would not be a fair price for 750,000 tons a year if our Allies are to pay the same price as the United States Government.

Spelter Prices in August.

Day.	New York.	St. Louis.	London.		
	Cents.	Cents.	£	s	d
1	8.67 $\frac{1}{2}$	8.50	54	0	0
2	8.67 $\frac{1}{2}$	8.50	54	0	0
3	8.67 $\frac{1}{2}$	8.50	54	0	0
4	8.73 $\frac{3}{4}$	8.56 $\frac{1}{4}$	54	0	0
5	8.73 $\frac{3}{4}$	8.56 $\frac{1}{4}$	54	0	0
6	8.73 $\frac{3}{4}$	8.56 $\frac{1}{4}$	54	0	0
7	8.67 $\frac{1}{2}$	8.50	54	0	0
8	8.67 $\frac{1}{2}$	8.50	54	0	0
9	8.67 $\frac{1}{2}$	8.50	54	0	0
10	8.67 $\frac{1}{2}$	8.50	54	0	0
11	8.67 $\frac{1}{2}$	8.50	54	0	0
12	8.67 $\frac{1}{2}$	8.50	54	0	0
13	8.67 $\frac{1}{2}$	8.50	54	0	0
14	8.67 $\frac{1}{2}$	8.50	54	0	0
15	8.61 $\frac{1}{4}$	8.43 $\frac{1}{4}$	54	0	0
16	8.61 $\frac{1}{4}$	8.43 $\frac{1}{4}$	54	0	0
17	8.55	8.37 $\frac{1}{2}$	54	0	0
18	8.55	8.37 $\frac{1}{2}$	54	0	0
19	8.55	8.37 $\frac{1}{2}$	54	0	0
20	8.55	8.37 $\frac{1}{2}$	54	0	0
21	8.30	8.12 $\frac{1}{2}$	54	0	0
22	8.23 $\frac{1}{4}$	8.06 $\frac{1}{4}$	54	0	0
23	8.23 $\frac{1}{4}$	8.06 $\frac{1}{4}$	54	0	0
24	8.23 $\frac{1}{4}$	8.06 $\frac{1}{4}$	54	0	0
25	8.11 $\frac{1}{4}$	7.93 $\frac{1}{4}$	54	0	0
26	8.11 $\frac{1}{4}$	7.93 $\frac{1}{4}$	54	0	0
27	8.11 $\frac{1}{4}$	7.93 $\frac{1}{4}$	54	0	0
28	8.11 $\frac{1}{4}$	7.93 $\frac{1}{4}$	54	0	0
29	8.11 $\frac{1}{4}$	7.93 $\frac{1}{4}$	54	0	0
30	8.17 $\frac{1}{2}$	8.00	54	0	0
31	8.17 $\frac{1}{2}$	8.00	54	0	0
High	8.80	8.62 $\frac{1}{2}$	54	0	0
Low	7.92 $\frac{1}{2}$	7.75	54	0	0
Aver.	8.48	8.30	54	0	0

Poor Government Report.

Some discouragement was noted immediately following the preliminary report of the United States Geological Survey which estimated first half 1917 production to be 364,000 short tons, an increase of 13,000 over the same period in last half 1916. Stocks on hand were 33,000 tons, an increase of 15,400 tons since January 1st. Fourteen entire plants were idle on June 30th. The publication of the report was followed by a fractional decline in prices.

By the close of the first fortnight it was announced unofficially that the bids accepted by the Government for the grade C purchase were from 8.75c to 9.00c f.o.b. East St. Louis basis. In the absence of buying the market gradually weakened to nominally 8.55c New York, 8.37½c St. Louis for prompt, August, September and fourth quarter delivery. On the 21st, another ¼c decline was noted. Brass special was offered for 8.75c, intermediate was 12 to 13c and high grade 13.50c. On the 23rd, 55,000 retorts were reported to be idle, this being one-fourth of the total number available and it was estimated that by the close of August only about two thirds of spelter capacity would be in operation. The continued absence of export orders was not understood, it being about four months or longer since

England and France had been known to make purchases here.

By August 27th, the market was in a semi-demoralized condition and quotations receded to the lowest point, 7.92½ to 8.30c New York, 7.75 to 8.12½c St. Louis for prompt, August, September shipments, with 8.05c New York, and 7.87½ to 8.25c East St. Louis for fourth quarter. It was announced that the British, French and Russian authorities have approved the purchasing of their requirements through the War Industries Board and the trade expected heavy orders in the near future. Toward the close of the month manipulation of the market was pointed out, a few sellers making offers at prices under bids. These sellers admitted having but small quantities of metal to dispose of and the trade believed that an effort to "smash" the ore market was behind the peculiar offerings. Zinc ores were firm throughout the month and unchanged, \$65 to \$75 for top grades.

On the last day there was less irregularity and quotations were advanced to 8.17½c New York, 8.00c East St. Louis for prompt, 8.05 to 8.30c New York, 8.00c East St. Louis, for September, fourth quarter ranging higher to 8.17½ to 8.42½c New York, 8.00 to 8.25c East St. Louis.

Review of Joplin Zinc and Lead Ore Markets For August.

For the month of August the base range for zinc blende ores remained on the dead level of from \$65 to \$75 per ton throughout the month. The market averaged approximately \$70 for all grades, which showed the remarkable uniformity of the market tone for the whole month. Practically the only feature came in the week of August 18th to 25th, when there was a decided demand for second grade ores, which helped materially in bringing up the averages of those two weeks as compared with the first two weeks. It was also noticeable in the increased shipments for those latter weeks. For cala-

mine ores there was a better demand the last week of the month, and this was reflected in the larger shipments of the week of August 25th, when the total tonnage went above 780 tons. The market average also reached \$43.00.

The lead market opened firm at \$110, but by the middle of the month dropped down to \$100 at which price the market closed showing a less demand than had been shown the earlier part of the month. The lower price for lead ores seems inexorable to local ore producers in the face of the comparatively steady pig lead market. They contend that the cut in prices affecting lead

Spelter Prices in St. Louis.

Extreme price fluctuations of Prime Western Spelter, East St. Louis delivery, by months and years.

	1914			1915			1916			1917		
	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.
Jan.	5.25	5.10	5.14	7.62½	5.55	6.33	19.25	17.12½	18.01	10.87½	9.00	9.82
Feb.	5.35	5.20	5.27	10.00	7.65	8.62	21.00	18.50	19.92	10.75	9.37½	10.32
Mar.	5.22½	5.12½	5.15	11.00	8.87½	9.80	20.62½	16.25	17.91½	10.87½	10.37½	10.65
April	5.12½	4.85	5.03	14.00	9.25	11.22	19.25	17.50	18.44	10.50	8.75	9.55
May	5.00	4.90	4.96	21.00	13.00	15.52½	17.75	13.12½	15.75½	9.50	9.12½	9.30½
June	4.97½	4.82½	4.93	27.00	17.50	22.14	13.87½	10.87½	12.62	9.50	9.00	9.28
July	4.95	4.80	4.84	22.75	17.75	20.53	9.75	8.20	8.92	9.00	8.27	8.64
Aug.	6.00	4.70	5.45	18.00	10.75	14.19	11.00	8.62½	9.52½	8.62½	7.75	8.30
Sept.	5.85	4.95	5.33	15.25	13.37½	14.10½	9.62½	8.50	9.06			
Oct.	5.00	4.60	4.81	14.62½	13.25	13.89	10.37½	9.25	9.83			
Nov.	5.20	4.80	4.97	19.00	14.37½	16.87½	13.12½	10.25	11.75			
Dec.	5.65	5.20	5.49	18.00	14.75	16.72	13.12½	9.62½	11.11			
Year	6.00	4.60	5.11½	27.00	5.55	14.16	21.00	8.30	13.57	*10.87½	*7.75	*9.48

* Eight months.

Spelter Prices in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	7.23	5.33	6.52	18.18½	9.97
Feb.	6.49	5.46	8.86½	20.09	10.49
Mar.	6.29	5.35	10.12½	18.10	10.82½
April	5.79	5.22	11.51	18.61½	9.73
May	5.51	5.16	15.82½	15.93	9.48
June	5.23½	5.12	22.62½	12.80	9.45
July	5.41	5.03	20.80	9.70	8.82
Aug.	5.80	5.63	14.45	9.10	8.48
Sept.	5.83	5.52	14.49	9.23½	
Oct.	5.47	4.99½	14.07	10.01	
Nov.	5.34	5.15	17.04	11.92½	
Dec.	5.22	5.67	16.91	11.28½	
Av.	5.80	5.30	14.44	13.75	

Waterbury Spelter Averages.

	1913.	1914.	1915.	1916.	1917.
Jan.	7.56	5.54	6.55	22.25	13.05
Feb.	6.81	5.70	11.85	22.70	13.80
Mar.	6.56	5.59	12.15	23.15	13.45
April	6.08	5.50	13.85	23.20	11.85
May	5.77	5.38	20.55	21.20	11.05
June	5.50	5.37	25.60	17.40	10.85
July	5.61	5.26	24.90	15.20	10.55
Aug.	5.99	5.66	19.30	13.60	10.05
Sept.	6.13	5.91	17.85	13.70	
Oct.	5.74	5.23	16.85	12.95	
Nov.	5.60	5.38	19.36	14.10	
Dec.	5.44	5.90	21.15	13.20	
Av'ge	6.06½	5.53½	17.50	17.72	

Sheet Zinc Price Changes.

The following table gives the changes in the base price of sheet zinc since June 27, 1916, together with the price of spelter ruling on the same day.

	1916—	Sheet Zinc.	Spelter St. Louis.
June 27		18.00	11.37½
July 6		17.00	9.37½
July 11		15.00	8.62½
October 26		16.00	10.12½
November 10		17.00	11.12½
November 17		18.00	12.00
November 20		19.00	12.12½
November 24		20.00	12.87½
November 24		21.00	12.87½
April 25		20.00	8.87½
April 26		19.00	9.00

Exports of Domestic Spelter and Sheets--Short Tons.

	1916		1917	
	Tons.	Value.	Tons.	Value.
Jan.	10,483	\$3,601,970	15,351	\$4,455,110
Feb.	10,328	3,638,003	15,551	3,933,047
Mar.	8,171	2,902,472	17,408	4,927,420
April	9,133	3,461,914	12,675	3,327,809
May	8,583	3,093,620	19,528	4,758,793
June	11,309	4,036,656	13,095	3,280,111
July	12,708	4,230,805		
Aug.	18,661	5,549,581		
Sept.	19,255	5,150,808		
Oct.	19,994	5,758,357		
Nov.	18,991	5,291,493		
Dec.	15,652	4,774,158		
Total	163,268	\$51,489,837		

ores is not warranted by the position held by pig lead, and for that reason are rather loathe to sell ores at this time.

Shipments of zinc blende ores averaged 9,256 tons per week with the latter week of the month showing the greater shipments. Calamine ores averaged 503 tons per week, and as in zinc blende ores the latter week showed the largest single shipment. This makes less than 10,000 tons of zinc ores weekly, as an average for the month of August, a record which shows some retrogression from the previous showings of the year. The surplus stocks of zinc ores were 17,394 tons at the beginning of the month. At the end of the month they had reached 18,218 tons. This increase in stocks was in the face of a decreased production in the sheet ground field at Webb City and Carterville where over 30 plants have already closed down and a curtailment of output reaching from 1,500 to 1,800 tons per week has taken place. Had it not been for this curtailment, the growth of

stock would have reached very much greater proportions owing to the restricted buying by a number of the zinc smelters that have reduced their smelting capacity within the last 60 days. While the curtailment has been rather large in the Webb City field, it has been offset to a certain extent by the increased production in the Oklahoma district where new mills have been started and other plants have been increased in capacity or have been able to run more days in the week than previously. The difference however, in the two camps lies in the grade of the ores, that of the Webb City field being higher grade than that of the Oklahoma district.

Shipments of lead ores averaged 1,251 tons per week during the month of August. This average was below the production average and the month showed an increase in stocks of approximately 1,000 tons, when the month closed with 5,485 tons lead ore stocks accounted for.

Lead in August.

Market Fairly Steady but Quiet on Account of Uncertainty Regarding Government's Price Policy—Mid-Year Production Statistics Satisfactory—Labor Disturbances a Retarding Influence—Trust Price Reduced \$10 Per Ton—Lead Ores Off \$10 Per Ton.

The August lead market was better sustained than other metals, perhaps, but suffered from labor disturbances and from the general inactivity prevailing because of the suspense generated by uncertainty in regard to Government action in its price-fixing policy, in its effect upon business. The Government purchased monthly requirements at 8.00c per pound covering three months. With the publication of mid-year statistics by the United States Geological Survey showing satisfactory production for the first six months and the prospect of an increased output for the latter half in sufficient quantity to meet the heavy wartime needs, the position of lead was improved, as it relieved the fear of scarcity which had prevailed previously. Compared with pre-war values, lead prices are higher than oth-

er metal values and have been well sustained, with more active business in larger volume, proportionately. Record production at high record prices have made the 1917 first half, the most prosperous period that producers have ever experienced. Waning confidence in the trade, as to continued record-breaking prices, at the close of the second fortnight combined with the $\frac{1}{2}$ c reduction in the official base of the "Trust" were responsible for the reaction in prices which declined from 10.87½c New York, 10.75c St. Louis on August 1st, to 10.37½c New York, 10.25c St. Louis at the close. The net decline for the month was $\frac{1}{2}$ c per pound.

At the beginning of the month, prices were unchanged from the July closing, 10.75 to 11.00c New York, 10.62½ to 10.75c St. Louis. Consumers had

withdrawn from the market. An unusual feature in the next few days was noted in the receding quotations on western shipments to 10.50 to 10.60c St. Louis while the New York quotations remained unchanged. The market was firm but quiet and the Government buying at 8.00c per pound of monthly requirements was officially confirmed without mention of the tonnage, which however, was understood to be 8,000 tons. The Government's price-fixing policy began to have an adverse influence upon future positions but with some buying in small quantities, western shipments recovered prices to the opening figures, while New York prices again remained stationary.

With scarcity of spot and early delivery increasing, prices advanced to 10.87½c New York, 10.75c St. Louis. The fact that the market price was 35% higher than what the Government was paying attracted attention and acted as a deterrent upon private business. Consumers bought only necessary requirements, declining to contract for future deliveries except upon a sliding scale basis. This, however, made it possible to do some business which otherwise would not have been accomplished.

With some lack of confidence developing in the third week, when business was at a standstill, it was quite natural that concessions in prices should be offered in order to accomplish sales. This caused a decline to 10.62½ to 10.87½c New York, 10.37½ to 10.62½c St. Louis for spot and August shipments, to 10.50 to 10.62½c New York, 10.25 to 10.50c St. Louis, for September on August 17th; after which, there was no change until August 23rd, when the drop of \$10 to \$100 for lead ores which occurred the day before, caused a ½c reaction on all positions. The following day, eastern and western prices were at the same level, 10.37½c for spot and August shipment and 10.25 to 10.50c for September.

Good Production Statistics.

On August 27th, mid-year lead statistics of the Geological Survey were published for the first time. Production was 306,062 tons, this being 20,495 tons greater than one-half the total ton-

nage in 1916. The gain was largely made on production from foreign ores and bullion which increased 20,086 tons. The statistics were regarded as being quite satisfactory and with the new Bunker Hill smelter beginning operations in July, production in the last half of 1917 is expected to far exceed all past records and to be sufficient to meet the heavy wartime requirements as well as private needs. Exports decreased 19,231 tons but domestic consumption was apparently increased 38,365 tons, which more than offsets the decreased foreign outgo.

Market Dull—Trust Price Reduced ½c Per Pound.

In the next few days, dullness reigned, no new business being reported but producers were well sold through September. Business for October, however, was wanted. Small daily transactions were sufficient to maintain quotations until August 29th, when the American

Lead Prices in August.

Day.	New York* Cents.	St. Louis. Cents.	London. £ s d
1	8.67½	8.50	30 10 0
2	8.67½	8.50	30 10 0
3	8.67½	8.50	30 10 0
6	8.73½	8.56½	30 10 0
7	8.73½	8.56½	30 10 0
8	8.73½	8.56½	30 10 0
9	8.67½	8.50	30 10 0
10	8.67½	8.50	30 10 0
13	8.67½	8.50	30 10 0
14	8.67½	8.50	30 10 0
15	8.61½	8.43½	30 10 0
16	8.61½	8.43½	30 10 0
17	8.55	8.37½	30 10 0
20	8.55	8.37½	30 10 0
21	8.30	8.12½	30 10 0
22	8.23½	8.06½	30 10 0
23	8.23½	8.06½	30 10 0
24	8.23½	8.06½	30 10 0
27	8.11½	7.93½	30 10 0
28	8.11½	7.93½	30 10 0
29	8.11½	7.93½	30 10 0
30	8.17½	8.00	30 10 0
31	8.17½	8.00	30 10 0
High	8.80	8.62½	30 10 0
Low	7.92½	7.75	30 10 0
Aver.	8.48	8.30	30 10 0

Smelting & Refining Company reduced its official base price $\frac{1}{2}$ c to 10.50c New York, 10.42 $\frac{1}{2}$ c St. Louis, this being the first change since June 8th. Quotations in the outside market followed the decline and were down $\frac{1}{8}$ c to 10.25 to

10.50c for spot and September, New York, and 10.25 to 10.37 $\frac{1}{2}$ c St. Louis. On the last day resale lots were offered at concessions from the "Trust" price and quotations were 10.37 $\frac{1}{2}$ c New York, 10.25c St. Louis.

Antimony in August.

Market Stagnant During Greater Part of August With Net Decline of $\frac{1}{2}$ c Per Pound—Mid-Year Statistics Reveal Reduction of 4,187 Tons in Production of Antimonial Lead—Communication With Orient Temporarily Interrupted.

Antimony in August suffered from the conditions pervading all other metal markets. Among events, was the interruption of communication with the Philippines and China, including Hong Kong, which disturbed trading for a time as messages had to be forwarded via Europe. Importers were entirely out of the market, temporarily also, the cost of importation being above the spot market price. Antimony being on the free list of articles proposed for a 10% duty by Revenue bill which was undecided for several months, the trade was relieved when such increase was stricken from the bill.

It was officially reported from Canada late in the month, that there was to be a curtailment in the manufacture of munitions in that country, which of course indicates a smaller demand from this country, Canada having been our best customer for a long time, and unless the needs of our own munition manufacture for antimony make up the deficiency, consuming demand will be reduced. Mid-year United States Geological Survey statistics revealed a reduction of 4,187 tons, for first half 1917, in production of antimonial lead. It was pointed out as a curious feature, that since our entrance into the war the price of spot antimony has declined from 36.00 to 14.50c per pound while shipments from China and Japan have declined but 3 to 4c per pound, with the prospect that because of the continued advance in the price of silver,

production costs in the Orient cannot be reduced. Predictions were freely made that smaller shipments from the Orient and higher prices would soon develop.

The reduction to 14.62 $\frac{1}{2}$ c on August 31st, from 15.12 $\frac{1}{2}$ to 15.37 $\frac{1}{2}$ c August 1st, indicates a total decline for the month of $\frac{1}{2}$ c per pound.

The month began with quotations down $\frac{1}{8}$ c per pound, to 15.12 $\frac{1}{2}$ to 15.37 $\frac{1}{2}$ c for prompt and August shipments with sales of August reported to have been made in 25 ton lots for 15.12 $\frac{1}{2}$ c while 5 ton lots were sold for 15.25c, duty paid. Consumers were making inquiries for September and October shipments but were not willing to pay the higher prices asked, 15.37 $\frac{1}{2}$ to 15.50c. With sellers reluctant on future offerings and with consumers' demands persistent, spot prices not only recovered the lost $\frac{1}{8}$ c per pound but advanced to 15.50c for prompt and August and 15.50 to 15.75c for September by the close of the first week with the market firm. In the following week the demand fell off and dullness became pronounced, with prices down to 15.50c for all positions on August 14th.

From that time on the adverse conditions influencing other metals were increasingly apparent and prices gradually receded every few days until the close, when prices for prompt and September were 14.50 to 15.00c, October 15.00 to 15.25c, the market having been in a practically stagnant condition for about two weeks.

Aluminum in August.

Market Dull and Featureless Throughout the Month.

The aluminum market in August was absolutely dull and featureless. Domestic consumers appeared to be well supplied with metal and prices remained stationary at the July closing quotations on the various qualities; 48.00 to 50.00c for No. 1 Virgin 98-99% remelted, 46.00 to 48.00c for 98-99% remelted and 36.00 to 38.00c for No. 12 alloy remelted, until August 23rd, when a decline of 1c was noted on all kinds. In the week following, not only weakness developed but the market was unsettled. Rumors of export inquiries

failed to develop into buying and the total absence of demand combined with the depressing influences in all metals brought about rather free offerings from second hands at concessions from quotations. Another drop of 1c in prices occurred on August 27th to 46.00 to 48.00c for No. 1 Virgin remelted, 44.00 to 46.00c for 98-99% pure remelted and 34.00 to 36.00c for No. 12 alloy remelted, after which there was no change either in conditions or in prices. The total recession for the month was 2.00c per pound.

Aluminum and Silver Prices.

— New York —				
Aluminum.		— Silver —		
1916.	1917.	1916.	1917.	
Jan. ...	54.33	60.00	56.77½	75.63
Feb. ...	57.50	58.05½	56.75½	77.57
Mar. ...	60.25	59.23	57.93½	73.86
April ...	60.00	60.00	64.41½	73.88½
May ...	60.00	60.00	74.27	74.74½
June ..	62.09	59.85	65.02½	76.93½
July ...	60.15	54.33	62.94	79.01
Aug. ...	59.48	48.48	66.08	85.41
Sept. ...	61.90		68.51½	
Oct. ...	64.55		67.85½	
Nov. ...	64.80		71.60	
Dec. ...	63.40		75.76½	
Average	60.73		65.6c	

Lead Prices in New York.

Based on American Smelting & Refining Company's quotations on 50 ton lots.

	1913.	1914.	1915.	1916.	1917.
Jan.	5.35	4.11	3.74	5.94	7.81
Feb.	4.35	4.06	3.82	6.23	8.34
Mar.	4.35	3.97	4.03	6.83	8.98
April	4.40	3.82	4.20	7.50	9.00
May	4.36	3.90	4.23½	7.50	9.71
June	4.35	3.90	5.87½	7.02	10.76
July	4.37	3.90	5.74	6.54	11.00
Aug.	4.63	3.90	4.75	6.25	10.91½
Sept.	4.75	3.86	4.62	6.75	
Oct.	4.45	3.54	4.59½	7.00	
Nov.	4.34	3.68	5.15	7.00	
Dec.	4.06	3.80	5.34½	7.44	
Av.	4.40	3.87	4.67½	6.83	

Any Room For Sentiment in Business?

For a long time we have contended against the theory which we find expressed in many quarters that business is something devoid of any sort of sentiment, that it is simply exchange of so many dozens or hours or pounds avoirdupois for so many dollars or francs, or pounds sterling, in which the forces of human interest and personality and sentiment have no part. Very earnestly—very heatedly, in fact—have we always argued that there never was a business transaction into which some element of sentiment did not enter and have its influence.

We are now ready to retract that statement, having discovered a street corner postage-stamp-vending machine. Here is one branch of trade that we freely admit seems to be absolutely void of sentiment. So far as we can see, there is no shadow of any sort of sentiment connected with this business. But it must not be overlooked that, while thoroughly successful we have no doubt, the postage stamp business is one operated under conditions peculiar to itself.

But, until such time as the manager finds it possible to reduce his staff to that unfailing precision of systematic service rendered by a well-regulated machine, until he is able to control an absolute monopoly of the sale of lines handled by him and by law to compel the public to use his goods according to rules laid down, with a good healthy penalty for any infringement—until such time—the possible coming of which you can figure out for yourself—this stamp business and the business in which you and we are engaged cannot be judged by the same standard.

So we come back to our original contention that, so long as a customer seeks out the pleasant and obliging clerk from whom to buy; so long as a clerk will continue to do for the employer who treats him as a fellow man things he wouldn't do for the grudging, grouching curmudgeon; so long as one salesman is able to present the same proposition more attractively than another, and so long as it is possible for a firm to inspire loyalty by its fair dealings—just so long will some phase of sentiment have its place in business, whether we wish it so or not; and that just so long will personality be an indispensable and incalculably valuable part of business capital.

No doubt you are very careful to select such brands and makes of goods as will give your customers full satisfaction; do you see to it equally that you show a pleasing personality to your patrons, and have about you a staff that do the same? No set of rules that could ever be compiled, however explicit and comprehensive and however rigidly enforced, could ever give you a service that would build up for you a pleased and loyal clientele, equal to that which is the natural result of the strong and attractive personality that may be given your business by those you have connected with you in it.

This being the case, it behooves us who are making the strongest bid we can for public patronage, to make our appeal not to our prospective customers' reason only but to their sentiments as well.—Adapted from "McClary's Wireless", London, Canada, in monthly Bulletin of American Iron and Steel Institute.

STEEL AND METAL DIGEST

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The Situation

Thursday evening, September 20th, it was announced at the White House that an agreement had been reached between the Government and the copper producers upon 23½ cents for copper as "one price for all". That announcement marked the inception of the most momentous change that has ever occurred in American commodity mar-

kets. The following Monday, September 24th, it was similarly announced that prices were agreed upon as basis prices for the iron and steel industry, \$33 for pig iron and 2.90c for bars, 3.00c for shapes and 3.25c for plates. These price fixings represented only the merest beginnings of an extensive operation in market control, for the original plan was comprehensive and there is good reason to assume that one control will bring on another, so that the final outcome will be a longer, rather than a shorter, list of fixed prices than was originally contemplated.

Immediately upon the copper price being announced trading stopped. There were bids but no offers. The producers stated that they were sold up. Second hands were fearful to sell as while they had not been parties to the agreement there was a Government threat to stop their supplies.

The case of steel was different from that of copper, as steel consumers were much more fully covered and the market had become stagnant before price fixing began. There is the further difference that while the copper requirements of the Government and its Allies are figured at 120,000,000 pounds per month for the next three months, against an expected production of 200,000,000 pounds per month, the proportion of steel production required for war will be much less than the 60% indicated for copper, perhaps little if any more than 30%. Considering the slowness with which regulations for the

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sale and distribution of copper are being promulgated, the case of iron and steel will not be fully attended to for many weeks, there being so many descriptions of steel and so many complications in its distribution.

The whole thing of Government price regulation is so new that the trade has been taking the near rather than the long range view. It has been asking questions how shall it conduct its business to-day, to-morrow, next week, rather than inquiring what will be the final outcome, months hence, of this gigantic experiment.

There were a great many who insisted that the "one price for all" doctrine enunciated by President Wilson in his "appeal" of July 12th was impractical. Whether they were right or wrong is not proved by events to date. What has occurred is only that the Government has undertaken to put business upon this basis. The system has not been put into practical operation. The markets are not acting. When this great nation is engaged in the greatest war in history it is not the time to say anything cannot be done. It is the time to do things. Argument as to whether the principle is practical or not has been dropped. It is a case of making the best of the circumstances.

What it is important to focus attention upon is that it is a complete change, not a partial change, in the method of conducting business that has been forced upon the trade. Hitherto all business has rested upon the question of price. Material, as material, has been secured by paying for it, and delivery has been secured by paying the premium necessary. Every purchase represented paying the price necessary for two things, the number of pounds or tons and the time. Now the price for the material itself is wiped out as a factor. Production is to be maintained and disposed of. The time factor is likewise wiped out, for the Priority Board will control deliveries, and fix sequences in the order it considers best calculated to help winning the war. War material comes first, then material not war material but still helpful, such as railroad material for instance, and

then all other. Whether what is left for the "all other" is much or little will depend upon circumstances. It will be one thing in copper and another thing in steel in general, and various things in steel products, little if anything left in plates for instance, and much more in merchant bars. It would be quite impossible to produce anything but chaos by fixing prices and nothing else, but if everything can be regulated there is a stupendous task, which if accomplished will not produce chaos. The regulation includes prices, sequence of deliveries and the character of material each productive unit is to turn out, within its limitations. Whole industries, from the material in the ground to the article of final use, are to be converted into single integrations. When they have prices, they will be comparable to the "intercompany" prices of concerns like the United States Steel Corporation, and the simile can be carried farther, the integration of an industry being like the integration of the Steel Corporation, whereby its ore mines and coke works serve its blast furnaces, its blast furnaces its steel furnaces, its steel furnaces its rolling mills and its rolling mills its structural shops, pipe welding furnaces and other finishing departments.

The task of producing this co-ordination and integration is immensely intricate but certainly not impossible, and not necessarily very difficult even, were it not for the two circumstances that the whole thing must be done suddenly and that there are very important contracts in existence, made under the old order of things. So much ability and knowledge is at the command of the Government, through the voluntary service of some of the very best men in the country, men accustomed to quick and accurate thinking, that the time limitation is not necessarily an insurmountable impediment. The disturbance produced by contracts is not so easily overcome. The Priority Board may ride rough shod over them in which case many involuntary sacrifices will be made to the war.

But from the long range viewpoint one must take it that these things are going to be done. Now we have found

in all the years of the past that when business is indisposed to go ahead it sets up trifles and insists that it is balking at them, when really it is doing nothing of the sort. It is not waiting for a decision of the Supreme Court, or of the Interstate Commerce Commission, or a national election, as it has so often fondly assured us, for afterwards we have seen it riding with irresistible force over still greater things which are never even looked at.

Business in America is going to proceed. It has the money, the ability and the energy, the indomitable energy of a nation fully aroused. However distant the end of the war may be, the far-sighted are looking to it. Peace talk has produced chills in the past but the time is coming when the result will be the reverse. For the much predicted "readjustment" after the war price regulation is a better antecedent con-

dition than the wild and uncertain market we have hitherto had, particularly in iron and steel.

We are marshaling all our forces for the war. What are they but industrial forces? What is it but that they shall be kept busy? If an activity must be curtailed for the better prosecuting of the war what is it but that it is to be converted into another activity, whether of man power, brains or capital? There will be much confusion and uncertainty, vexatious and trying in the extreme. Besides winning the war the country will measure up to standards never dreamed of before the war, and after the war it will still have those standards, of co-operation between men and between Government and business, that will mean more in the years to come than the most ardent can now conceive. We are getting to understand and appreciate each other.

Business Trends.

Commodity Prices Here and Abroad.

While the subject of price fixing engages considerable attention these days it is noteworthy that "Bradstreet's" Journal reports that the swing of commodity prices, considered in a collective sense, is still upward. This authority in citing the factors responsible for its latest index number which marks a new high record, viz., \$16.6441 says in part as follows: "In some few directions the hand of the government has reached out, thereby creating a degree of ease, particularly in respect to wheat, some of the metals and bituminous coal, and, moreover, seasonal changes due to favorable crop news have superinduced lower tendencies, but the changes thus brought about may be likened to the proverbial drop in the bucket. Indeed, the net results of the past month's changes clearly disclose that the flow has been considerably stronger than the ebb, and this manifestation is evidenced in live stock, beef, pork, dairy products, mackerel and sugar, all of which closely touch the ultimate consumer. At the same time wool continues to rise, as do hard coal, oils and tobacco."

On the other hand, as measured by "Dun's" index number, the position of wholesale quotations for the same time was slightly lower than a month earlier, the figures being \$215,010 against \$218,779 revealing a decrease in per cent. about equal to the increase shown by "Bradstreet's" number. "Dun's" explains that it was only because of the decline in breadstuffs that its index number of commodity prices did not react still another high level.

However, it is of interest to note that the present total is 41.4% higher than it was a year ago, and comparing now with August 1, 1914, there appears a similar difference of more than 78%. Going back to the bottom point on "Dun's" record, \$72,455 on July 1, 1897, it is seen that prices here as a whole, are up nearly 200%.

The commodity price index number determined monthly by the London

"Economist" shows a decrease for September over the August record figure of 24 points, standing now at 5634. In September, 1916, the index number was 4423, the gain in the last twelve months being 1211.

The basis of the "Economist" index number is established at 2200, representing the average for the five-year period 1901-1905. The September figure represents an advance of 257.2% over this.

A wide range of price movements is set forth in the following tables in which are given "Bradstreet's" index numbers over a period of years:

	1913.	1914.	1915.	1916.	1917.
Jan.	9.4935	8.8857	9.1431	10.9163	13.7277
Feb.	9.4592	8.8619	9.6621	11.1415	13.9427
Mar.	9.4052	8.8320	9.6197	11.3760	14.1360
April	9.2976	8.7562	9.7753	11.7598	14.5769
May	9.1394	8.6224	9.7978	11.7485	15.1203
June	9.0721	8.6220	9.7428	11.6887	15.4680
July	8.9522	8.6566	9.8698	11.5294	16.0680
Aug.	9.0115	8.7087	9.8213	11.4414	16.3985
Sep.	9.1006	9.7572	9.8034	11.7803	16.6400
Oct.	9.1520	9.2416	9.9774	12.0399	
Nov.	9.2252	8.8620	10.3768	12.7992	
Dec.	9.2290	9.0354	10.6473	13.6628	

Yearly Averages.

1900	.....	7.884	1909	.....	8.515
1901	.....	7.575	1910	.....	8.988
1902	.....	7.876	1911	.....	8.713
1903	.....	7.936	1912	.....	9.187
1904	.....	7.919	1913	.....	9.211
1905	.....	8.099	1914	.....	8.903
1906	.....	8.418	1915	.....	9.853
1907	.....	8.905	1916	.....	11.825
1908	.....	8.009	1917	.....	13.120

Excellent Failure Reports.

Excellent monthly failure returns this year, showing casualties and liabilities on a descending scale, have prepared the way for a pleasing nine months' showing. The reasons for this, of course, are not far to seek, and may be epitomized in the phrase, war demand and war prices. Trade has been and is active beyond other years; there has been insistent demand for practically all products; the earnings of the

Business Trends.

great mass of the community have been large; wage advances have been the rule rather than the exception; the farmer, receiving undreamed-of prices for his last crop, finds large if not bumper new yields awaiting; foreign takings have been limited only by ability to ship goods bought and paid for, and industry has had only two complaints to make, namely, as to the scarcity of material and the shortage of labor to enable it to convert its activity into a cash equivalent.

It is no surprise, therefore, that "Bradstreet's" journal reports that failures for nine months of this year were the smallest in number for any year since 1911, while the liabilities were the lightest since 1909. This has occurred in spite of, it might almost be said because of, the country becoming involved in war, though it should not be forgotten that a good deal of the apparently cumulative prosperity was visible while the United States was still a neutral. However, the facts are that failures have shrunk quite steadily in number since the opening month of 1915, and the September total is the smallest for any month since September, 1910, while only four months in six years have shown a smaller total of liabilities than in the month just closed.

Following will be found "Bradstreet's" record of failures, assets and liabilities for nine months of the calendar year, with comparisons for 12 preceding years:

	Number failures.	Assets.	Liabilities.
1917	10,073	\$66,440,228	\$126,133,636
1916	12,619	66,694,037	136,453,696
1915	14,699	129,237,331	219,926,657
1914	11,536	152,786,525	275,071,917
1913	10,400	120,146,059	208,746,745
1912	10,306	78,172,527	152,910,459
1911	9,295	77,286,852	138,049,423
1910	8,561	65,352,040	136,837,905
1909	8,768	54,463,124	107,911,968
1908	10,691	143,326,035	244,835,494
1907	6,882	61,295,359	111,248,058
1906	6,866	44,316,174	89,522,183
1905	7,421	46,224,640	87,749,938

Fewer New Enterprises.

Promoters of new enterprises are less active than for quite a while. Incorporations in the Eastern States last month with a capital of \$1,000,000 or over, for example, involved only \$202,500,000. This is the smallest monthly total since September, 1916, when the output of charters represented \$164,700,000.

Following are the comparative figures as specially compiled by The Journal of Commerce and Commercial Bulletin of companies incorporated in the Eastern States during the last three years, with an authorized capital of \$1,000,000 or more:

	1917.	1916.	1915.
Jan.	\$244,450,000	\$270,995,000	\$51,150,000
Feb.	283,815,000	366,995,300	53,950,000
Mar.	281,000,000	194,750,000	70,050,000
April	361,510,000	166,650,000	32,200,000
May	388,481,000	209,735,000	78,950,000
June	352,584,000	264,350,000	181,247,100
July	416,350,000	217,662,500	71,100,000
Total	\$2,710,290,000	1,703,519,800	605,747,101
Aug.	382,100,000	113,472,000	67,100,000
Sept.	202,500,000	164,700,000	286,625,000

Iron Production Falling.

Pig iron production again fell off slightly, the September total being 3,133,954 tons for thirty days or 104,465 tons a day, against 3,247,947 tons in August, or 104,772 tons a day.

The figures for the daily average production according to the "Iron Age" beginning January, 1914, are as follows (in tons of 2,240 pounds):

	1914.	1915.	1916.	1917.
Jan.	60,808	51,659	102,746	101,643
Feb.	67,453	59,813	106,456	94,473
Mar.	75,738	66,575	107,667	104,863
April	75,665	70,550	107,592	111,165
May	67,506	73,015	108,422	110,238
June	63,916	79,361	107,053	109,002
July	63,150	82,691	104,017	107,820
Aug.	64,363	89,666	103,346	104,772
Sept.	62,753	95,085	106,715	104,465
Oct.	57,361	100,822	113,189	.....
Nov.	50,611	101,244	110,394	.....
Dec.	48,896	103,333	102,293	.....

The Labor Outlook.

(By Alexander Vincent, of the Brookmire Economic Service, Inc.)

Complaints continue to multiply as each week goes by, of the steady increase in the shortage of labor. Gradually, the situation is beginning to take on those proportions which are calculated in the common expression, to make the employer "sit up and take notice." If any confirmation were needed of the reports which come from widely scattered districts, as to the growing seriousness of the situation, it is to be found in the latest report of the U. S. Bureau of Labor Statistics.

This report shows that in the mills and factories, etc., of seven out of thirteen industries reporting, a fewer number of hands were engaged in the month of July than in the month of June. The automobile industry shows the sharpest decrease, and in view of the fact that the number engaged in this industry has been steadily declining for many months past, the conclusion is justified that the outlook for this one branch is none too promising. There were also sharp declines in shoe factories, cotton finishing plants, mens' clothing and paper factories; a less severe break occurred in the case of tanners and hosiery and underwear manufacturers. Of the six other industries, five of them showed but a very small increase in the number employed—thus in iron and steel mills, cotton manufacturing, woolen mills, silk mills and cigar manufacturers. In only one industry, viz., car manufacturing and repairing, was there a really sharp rise in the number of hands employed. (See accompanying chart).

The Government report in commenting on the situation seeks to explain the declines by calling attention to the fact that the month of July includes the vacation periods. When we compare this last month, however, with July of last year, we find that eight of the industries made a poorer comparative showing than did last June, compared with the corresponding month of a year ago. One of the industries shows exactly the same comparison and in only four of them was a better showing made. In

light of this, it would seem that the fact of vacations is hardly a sufficient explanation of the declines. The following table lists June and July employments compared with the corresponding months of 1916.

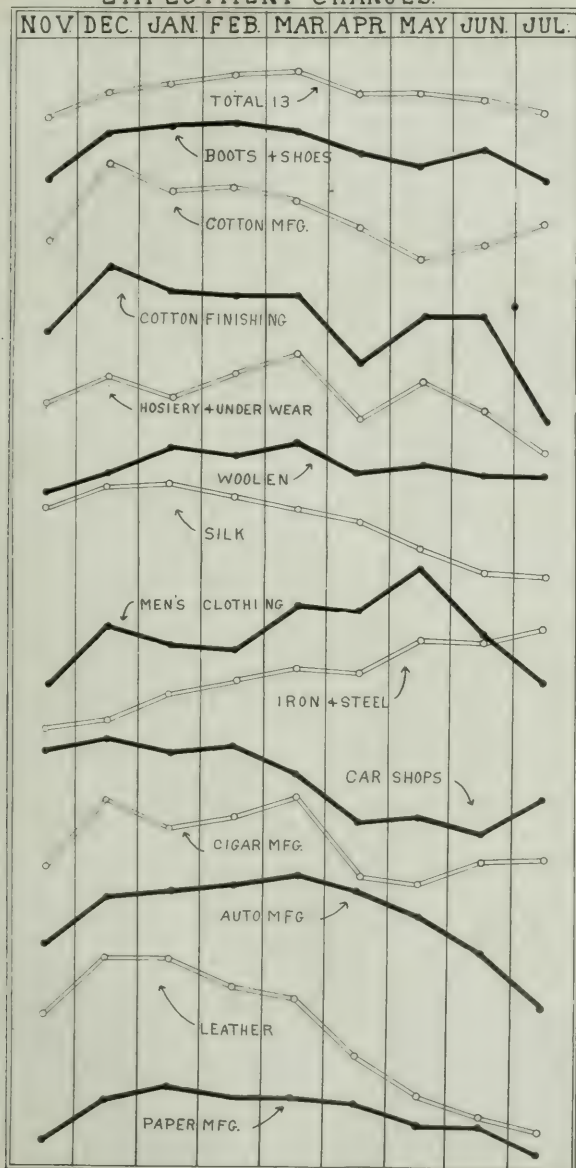
June and July Employment Compared with Corresponding Months of 1916.

	June.	July.
Boots and shoes	- 3.8%	- 3.7%
Cotton mfg.	- .7	+ 1.6
Cotton finishing	+ 2.6	- 0.3
Hosiery and underwear +	1.3	- 0.5
Woolen	- 1.4	- 2.5
Silk	- 5.3	- 4.2
Mens' ready made clothing	+12.6	+ 7.2
Iron and steel	+18.4	+12.0
Car building and repairing	- 6.4	- 0.1
Cigar mfg.	+ 3.2	+ 3.2
Automobile mfg.	+14.6	+ 1.6
Leather mfg.	+ 2.1	- 1.4
Paper making	+ 6.0	+ 3.7

Looking further, then, it would seem that there is little doubt but what the smaller number of automobiles that are being used, except for commercial and industrial uses, and also a decided curtailment in retail purchases of shoes, etc., which has been apparent for some time, are two factors which have united with others to help along the declines in question. Over and above these minor influences, the numerous officers' training camps, the continued enlistments in the army and navy, the calling of practically all the units of the National Guard into active service, and finally the drafting of men for compulsory service, these are the developments which are of vital import to the labor situation of to-day.

The falling off of demand for goods has been too restricted and too local, while the needs of the military have been too great to permit the situation being viewed with complacent calm. Everyone who gives the question a moment's thought, is ready to admit that under the circumstances, new labor must be found some place. It is perhaps the logical thing to turn to the expedient of employing women in the

EMPLOYMENT CHANGES.



place of the men taken, but in view of the fact that to have women perform some of the work in question, a complete metamorphosis would have to be undergone, it is somewhat unworthy of American business intelligence to note how once the remedy of employing women is considered, the question is immediately dropped as a problem settled.

The supreme confidence which seems to prevail rather generally, that it will be possible to substitute women for men, over night as it were, in any line of endeavor seems traceable to the work of an over-zealous feminist or an enterprising photographer who secured wide publicity for several photographs of longshore-women wheeling about barrows filled to overloading with bundles of rattan, and doing various other of the longshoreman's tasks, all of which required most laborious and herculean poses. The convincing and persuasive powers of the pictures in question were very much hampered by the fact that all the longshore-ladies, in no matter what pose taken, continued to wear their fashionable pumps and what looked suspiciously like silk stockings.

In order to know just how far it is well to trust our labor needs being filled by women, it is advisable to look to the experience of Great Britain in this regard. The British Ministry of Labor has just issued a report which is interesting and very much in point. The report shows that excluding domestic servants, hospital and red cross nurses, and all casual employed women who were not really part of the commercial and industrial labor force, total number of women in the commercial and industrial labor army of Great Britain has increased from 3,298,000 to 4,528,000, an increase of 1,240,000 workers. Put in another way, and taking into account some 963,000 women employed regularly outside of those covered by the figures already quoted, we find that about one woman out of every five is regularly and steadily employed. The report adds that in 1,256,000 cases, investigators of the Ministry of Labor

were able to trace direct substitution of men by women who perform exactly the same work.

Employers who intend to use women in men's places, should consider carefully England's experience, and should attempt the substitution only in those lines where that experience shows the venture to have been successful. The following table shows the number of British women employed in various lines before the war, the net number of new employees added, and the net percentage increase.

			%
	Pre-War.	Increase.	Increase.
Total mfg.	2,186,000	649,000	29.7
Private	2,184,000	453,000	20.7
Government	2,000	196,000	...
Mercantile	496,000	307,000	61.9
Banking	9,300	50,500	532.0
Transportation	19,000	62,000	326.5
Civil Service	164,000	136,000	82.9
Professional			
Pursuits	67,500	21,000	31.3
Others enumerated	356,000	14,500	4.1
Total enumerated	3,298,000	1,240,000	37.6

Summed up, the experience of Great Britain seems to have been that women have been successfully substituted for men, not where they have been put in entirely new fields, but rather in fields where their efforts had already been successfully utilized, though to a much smaller extent, under peace conditions. Entirely new government projectile plants have, however, offered them a wide field for success. In mercantile pursuits, they have been successfully substituted in office positions, in the selling of goods and in a few manual occupations where dexterity rather than strength is the main requisite. Finally, in transportation they have not only had expected success as ticket sellers, but have also had an unexpected success as conductors of tram cars and omnibuses.

All told, as the labor pinch becomes more widely felt, the substitution will doubtless grow and become more general, but past experience by no means justifies the conclusion that such substitutions are going to prove an easy and simple remedy for the growing evil.

Proportion of War Steel to Productive Capacity.

We have been rather surprised at the number of observers who in the past few weeks have expressed the view that after war demands for steel were satisfied there would be little left for the ordinary commercial needs of the United States, and the statement by an eminent authority, just after the price agreement was reached between the Government and steel makers, that orders for 7,000,000 tons of steel would be distributed in the next 60 days, for the Government and its Allies, furnishes an excellent opportunity for reviewing this matter afresh.

Naturally the tonnage appears extremely large, and yet it is only about 20% of a year's output. The tonnage is large because the price question has been settled. Purchases on behalf of our Allies are to be made at the same prices as those for the Government. Purchases by the public are also to be at the fixed prices. Until the agreement was made the Government presumably placed only such of its orders as required early deliveries, and thus the agreement releases a great deal of business. Purchases on behalf of the Government's Allies had to be held back entirely and as such purchases had been practically suspended for months, while shipments continued a very large mass of business has accumulated, ready to be released now that the price matter is settled. A recent Wall Street estimate was that the Government had placed orders for 3,200,000 tons of steel, but this was undoubtedly in excess of the fact, as in any event the orders would be very largely filled by the end of this year, seeing that the filling of them began more than six months before the end of the year. To have a precise figure, let it be assumed that 1,000,000 tons of the business already placed involves delivery after January 1st.

Likewise it must be allowed that the 7,000,000 tons referred to will not complete the program for the year 1918

if the war continues as long. To have another precise figure, let it be assumed that additional orders for 1918 will amount to one-half as much as the 7,000,000 tons, or 3,500,000 tons. That would make a grand total of 11,500,000 tons for the Government and its Allies. Now as to capacity and production.

Statistics have shown that the steel ingot production in the United States in July was at the rate of 44,000,000 tons a year. An excellent authority compiled a statement last August that the existing ingot capacity was 49,500,000 tons, and that there was 3,800,000 tons capacity under construction, to be completed within about six months. Finished rolled steel production runs 75 or 76% of the ingot production, hence we have a 33,000,000 ton rate for finished rolled steel in July, when production is generally about 5% under the year's average, on account of the weather. Allowing for a considerable shortage of coke, even after the by-product ovens expected for the next few weeks are completed, we should be able to count upon 48,000,000 tons of ingots and 36,000,000 tons of finished rolled steel. The 11,500,000 tons of war steel already summed up would be 32% of the output. The percentage is likely to be under rather than over 32%. We have endeavored to take the outside estimate for the war steel and the inside estimate for the production. If under stress of labor shortage, transportation difficulties and other circumstances growing out of the war the output is restricted more than is here allowed for, there is good reason to believe that the commercial requirements in steel will be even more restricted, so that the essence of our argument is not affected, that there is no serious danger of a decided shortage of commercial steel.

Two facts must be considered in connection with the estimates just made. First, the 11,500,000 tons would not be in its entirety an addition to the de-

mands made upon the steel industry. Second, the steel industry's capacity has largely increased.

The distribution by the Government of orders on behalf of its Allies succeeds to the buying these Allies have hitherto been doing on their own account. Last year's exports of steel as such amounted to about 5,200,000 tons. The steel consumed in making shells, machinery and all other steel manufactures we have hitherto estimated at about 1,800,000 tons, making 7,000,000 tons of rolled steel in all for 1916 involved directly and indirectly in the export trade. The production was 30,500,000 tons, and thus 22,500,000 tons was left for the domestic trade. That is approximately the same amount as was consumed in 1912 and 1913, the best years before the war.

Of the 7,000,000 tons involved in exports one may guess that something like 5,000,000 tons was involved in exports to the countries now our allies in the war. The present war steel program absorbs the tonnage, whatever it was.

There is every reason to expect that as long as steel is scarce in the United States the Government will not permit exports to neutrals, hence for the purpose of this argument we may count such exports out. The result is that if we accept the figures of 11,500,000 tons of steel for the war program in 1918, and production at 36,000,000 tons, there is left 24,500,000 tons for domestic commercial consumption, against 22,500,000 tons in 1916. It is difficult to see how this consumption could possibly increase, there being so many directions in which it is visibly decreasing.

By no means does it follow that steel of all descriptions will be plentiful. The steel rolling industry is highly specialized. One cannot roll plates instead of rails, or structural shapes in place of merchant bars, or black plates for tinning in place of ordinary black sheets.

This fact, however, applies just as much in the matter of satisfying the war demand as it does in the matter of satisfying the peace demand. The greatest pinch will come as to ship plates. The production of mills that can roll such plates was only about 1,800,000 tons in 1916. The largest figure yet set upon American shipbuilding in 1918 is that used by the British Controller of Shipping, who recently authorized the Associated Press to say that he would like to see 6,000,000 tons of shipping built in the United States in 1918. He set the amount of steel involved at 3,500,000 tons, which is a rather high proportion of gross tons of steel to gross register of vessels. There should be deducted an allowance for wooden ships, which do not employ plates except universal mill plates, and of them there is an ample supply for all necessary purposes, and of the steel remaining, for steel ships, between one-fourth and one-third is in structural shapes, which also present no problem. There would be required, then, say 2,500,000 tons of ship plates for our shipyards. This we can furnish, and some plates in addition for foreign yards, possibly 3,600,000 tons in all, or double our production of this class of plates last year, but certainly there will be no plates, except those not available for shipbuilding, for ordinary commercial purposes.

The reason we can contribute what appear to be enormous tonnages of steel for prosecuting the war, and still have much steel left, is that we have a capacity approximately two and one half times the total production in the past year or two of England, France, Italy and Russia, and the fact that our rolling capacity for producing certain forms of steel will be severely strained, while much steel will be left for rolling into other forms, is a very cogent argument in favor of price control, for the reason that a famine in one description of steel tends to advance the prices of other descriptions, which may in the last analysis really be rather plentiful.

French Plan to Solve After-War Financial Problems.

An international bank to handle the financial problems that will arise after the war is a project that has been suggested in France. The plan, which is proposed by M. Andre Citroen, a well known manufacturer of war material, is published by the "Petit Parisien" of Paris. The paper quotes M. Citroen as follows:

"Among the many problems which will have to be solved by the representatives of the belligerent nations at the close of hostilities will be the balancing of the world's financial accounts, and the means I suggest for doing this are that a bank of the nations should be created with the power of issuing an international and compulsory currency throughout the world, or at least in the belligerent countries, victorious and vanquished.

"This bank will have the sole right to issue and fix the value of the new money and decide the quantity of notes to be issued. This new money will not have its counterpart in gold as formerly, for the war has shown that without a counterpart in gold it is possible to issue a certain quantity of bank notes the value of which is based on the credit of the fighting nations.

Value of New Bank Note.

"In this new system the value of the newly created bank note, which we will call the simplex, will be based not on the credit of one country alone, but on all the nations. One could fix its approximate value, however, in relation to gold, which will still remain a product of international exchange. It will be decided, for example, that three simplex represent a gramme of gold, thus bringing the value of a simplex note down to about the value of a franc.

"Each nation will receive a number of simplex notes corresponding to the sacrifices made by her in the war, such as the amount of money spent, the cost of reconstruction, and pensions for widows, orphans, and invalided soldiers. From their total allotment of

notes the vanquished nations will have deducted an amount corresponding to the war indemnities which will be fixed according to the wrongs committed.

"The financial difficulties of the warring countries will be solved with the help of these international bank notes, and by the withdrawal from circulation of all those notes which have been issued during the war, such as rents, defense bonds, bank notes, etc., and these will be replaced solely and simply by the international currency. As soon as the operation has been completed no country will have any war debts, and consequently no more war charges, and will thus obviate one of the greatest and most important difficulties—namely, the crushing of the taxpayer when the war is over by taxes which will absorb the greater part of the revenue of a country.

Effect of New Currency.

"The second phase of the operation will consist in utilizing and in placing this formidable quantity of paper currency. The holders of rents and bonds will no longer have revenues represented by coupons, but will have in their hands this international money. It will be necessary that they should utilize it in investing in shares capable of bringing them interest. There will be a decrease in the rates of interest on money. Shares which brought in 5 or 6% will be reduced to 3 or 4%, to the prejudice of the holders, but to the profit of the workers. Then there will be the capitalization of new issues. Industries which seek to develop themselves will be able to go to a public loan department and obtain the necessary money.

"These two categories will absorb a great deal of the new money, but it is the third category which will be the most important. This category will allow the creation of enormous companies which will be formed with the consent of the State. One has never found in France the formation of com-

panies on a very large scale to settle the interesting problems of one country as a whole or of districts as a whole. Immense tracks of electrified railways, the construction of canals, the construction of roads for automobiles, central heating departments for towns, the development of electric lighting, the development of the telephone service, and such enterprises have not been able to be carried out owing to lack of capital. The affluxation of new capital will per-

mit of their being constructed, and the interest on the loans will help to bring the circulation fiduciary within normal limits."

The author of the scheme recognizes that the selling of the products, higher wages to workmen, higher cost of living resulting from such a system will have to be taken into consideration, and that offices will have to be set up for exchanging the old money for the new.

Lake Iron Ore Shipments Satisfactory.

Lake Superior iron ore shipments this season will fall somewhat short of those of last year, but are not altogether disappointing as even before the season opened it was doubted whether as much ore could be moved this season as last, when the shipments far exceeded expectations. When the season opened with a serious handicap owing to almost unprecedentedly late breaking up of the ice it was accepted as certain that the season movement would fall short. Last year had the advantage, moreover, of the shipment of considerable stocks that had accumulated at mines.

Owing to ice, both April and May this year fell far short of the records made in 1916. June, July and August showed gains, but September fell short. The movement to October 1st was 46,060,103 tons, or 2,756,547 tons less than last year's shipments in the same period.

Shipments after October 1st are effected by weather and the need of moving grain. The demand for grain movement will hardly exceed that of last year, and there may be a slight gain in the ore movement. The prospect is that the total movement by lake and all-rail will be about 64,000,000 tons, against a trifle more than 66,000,000 tons in 1916.

This year's ore movement might have developed a shortage had it not been that the operation of blast furnaces has been restricted by shortage of coke. Pig iron production to date has been

about 200,000 tons short of the output in the corresponding period last year, whereas there have been more furnaces available, on account of new construction. At best there will be scarcely any more ore than enough to take care of the blast furnaces regularly tributary to the Lake Superior ore region. This may prove somewhat unfortunate for eastern producers which have lately been depending upon imported ore, the movement of which is both uncertain and expensive at this time. Their bidding for Lake Superior ore might have proved very embarrassing to the central western consumers who depend upon buying Lake Superior ore had it not been for the agreement of the Lake Superior ore producers to continue their 1917 prices. It may be noted that this agreement, while announced as an agreement to maintain ore at \$5.05, meaning Mesabi non-Bessemer on Lake Erie dock, with the other descriptions also at 1917 prices, was in essence an agreement to maintain the same prices, subject to the lake vessel rate. The season rate for 1917 was \$1.00, or double the 1916 rate. If that rate were to change the ore prices at Lake Erie docks would correspondingly change. For a time there was a possibility of a lower vessel rate, even though the wild rate reached \$1.50 recently, but the advance in lake vessel wages, arbitrated recently by the Shipping Board, is taken as good reason for expecting a \$1.00 rate for next season.

Industrial Uses of Aluminum.

Recent Developments.

The many industrial uses of aluminum developed in recent years were described before the American Institute of Metals in a paper by F. G. Shull, of the Aluminum Company of America, of Boston.

In preparing a paper on this subject I have chosen to refer to the following materials, practically all of which have reached stages of commercial importance during quite recent years: Aluminum foil, aluminum bottle caps and jar closures, manufactures involving autogeneous welding, die and pressed castings, tubing for store service, rolled rod for machining purposes, and aluminum conductors, steel reinforced.

The aluminum foil industry has grown from practically nothing to a volume of business involving many tons of aluminum annually. At the start, the product consisted principally of plain foil, not appreciably unlike plain tin foil in appearance which was used for wrapping candies, chewing gum, teas and the like. Later on the development of the process for embossing and printing aluminum foil opened up a large field among manufacturers of chocolate bars, cheese, toilet soaps, etc., so that to-day a very considerable tonnage of this foil is being used in the embossed and printed form.

Plain foil is being used to some extent in electrical condensers. A most recent use for plain foil, which has, as yet, just barely started, is for the lining of pulp board cartons for the packaging of coffee. This combination package possesses moisture resisting, and oil retaining characteristics not inferior to the tin can as a coffee container.

Aluminum bottle caps and jar closures on the market, known as the "Goldy" seal have, like foil, advanced from a meagre beginning to a business of substantial proportions during a very few years. They are being used on practically all food products put up in glass, such as grape juice, fruits, preserves, ketchup, pickles, salad dressing

and so on. While this seal possesses the non-refillable feature and requires no opener to remove, it owes its success, in a great degree, to the fact that it is aluminum, which is known to be non-rusting and strictly hygienic.

The development of a process of welding aluminum by means of the oxy-hydrogen and oxy-acetylene flame has opened an almost limitless field for the outlet of aluminum. Sheet aluminum of all gauges heavier than about one-thirty-second of an inch can be readily welded and the seam dressed off so that it is difficult to locate the joint. Consequently it is possible to build up an aluminum tank or container of almost any size and shape which, when welded together, is practically a one-piece job. This class of material finds a place in breweries, ginger-ale plants, milk depots, chemical plants, and, in fact, wherever seamless metallic non-rusting containers are wanted. The one-piece feature is of marked advantage over the riveted tank which is always liable to spring a leak.

For a long time it has been considered a difficult proposition to die-cast aluminum. At the present time, however, this problem seems to have been solved as there are several companies that claim to be successfully die-casting this metal.

Another quite recent development is the subjecting of sand castings to very high pressures in order to render the metal more dense and to increase the strength. Such castings have been found useful in the making of parts for the timing devices of shrapnel, it being found that these castings not only possess extra high strength, but that they also machine exceptionally well.

Aluminum tubing for pneumatic store service is not a new field for aluminum, strictly speaking, since it has been gradually coming into use for the past several years. It is a fact, however, that the last few years have seen the volume of aluminum consumed for this purpose reach a stage where the

tonnage involved is of very great importance. The national characteristics of the metal itself principally recommend it for this use.

One of the most interesting developments in the aluminum industry of recent years is the rolling of high alloy rods in practically all commercial sizes. This method of manufacture prevented the use of aluminum alloyed with any appreciable percentage of other metal, for the reason that in the drawing operation the surface, principally, of the rod is worked. The result is that the surface becomes hard while the body of the rod is left comparatively soft. Therefore, only the smaller sizes of drawn rod are suitable for machining.

By the rolled method of manufacture not only is it possible to use highly alloyed metal, but also the process tends to work the entire mass of the rod so that the finished product is a good uniform homogeneous material which machines well throughout its entire substance. This process, therefore, makes available a good machining aluminum rod in commercial sizes for automatic machine and turret lathe products.

One of the first uses for which this rolled rod was tried, was for the machining of the fuse-timing parts for shrapnel. While it worked perfectly for this purpose, it so happened that the principal timing parts were of such a shape that in making them from rod it was necessary to cut away a great deal of the metal, resulting in high scrap loss. It was found that sand castings of the general shape of the parts to be made could be subjected to a compression process and rendered highly satisfactory for this purpose, with a minimum of scrap loss. Consequently, as a commercial proposition, the rolled rod could not compete with the compression castings for this particular article. It will without doubt, however, find wide usage for automatic machine products.

Aluminum cable, steel reinforced, is not a very recent aluminum product, it having been in commercial use on an extensive scale for the past few years. It is, however, sufficiently little understood to seem to warrant reference being made to it under the title of this paper.

The excuse for the existence of such a product as steel reinforced aluminum cable lies in certain inherent characteristics of aluminum which needed improving in order to recommend its use for long span, high voltage work. The particular characteristic to which I refer is the co-efficient of expansion of aluminum which is approximately one-third greater than that of copper. Due to this greater expansion the aluminum line lengthens a little more with temperature rise, and shortens a little more with temperature fall, than copper. The result is that it is necessary to string aluminum wire with greater sags than copper wire in order that its strength may not be overtaxed at low temperatures. By allowing this greater sag at ordinary temperatures, combined with the higher co-efficient of expansion of the aluminum referred to, one is apt to get excessive sags at extremely high temperatures in summer.

This was a condition of comparatively little importance in the early days of low voltages and short spans, but with the advent of higher voltages and long span steel tower construction, the characteristics of aluminum cable, as referred to above, became a serious menace to its commercial existence.

What aluminum cable lacked was high tensile strength and low co-efficient of expansion. In order to impart these characteristics it was proposed to make the center strand of a seven-strand cable, of steel, and the six outer strands, of aluminum, the steel to furnish the strength, and the aluminum the electrical conductivity. A very high grade plow steel wire was selected, which was triple galvanized to prevent corrosion, and the practical tests which followed proved that the theory was correct: that the composite cable took on characteristics different from either of the component metals, and was highly satisfactory for long span work.

It is found feasible to construct these cables with any standard number of strands, varying the proportion of steel and aluminum to meet the particular strength and sag conditions required.

Aluminum cable, steel reinforced, began to grow in favor from the start, so that to day many of the most modern

transmission lines on the American continent are built with this cable.

This, in a general way, will give a hint as to some of the more recent uses of aluminum. The automobile industry

is, of course, the big factor in the aluminum business to-day, but the relative importance of some of the other fields for this metal seem to be greatly on the increase.

OUTPUT OF CANADIAN STEEL GAINS 42%.

**Production for First Half of Year
836,149 Tons.**

The total production of steel ingots and direct castings in Canada in the first six months of the current year amounted to 836,149 short tons, an increase of 246,596 tons, or 42% over the corresponding period of 1916.

Average monthly production was 139,858, against 98,259 in the first half of 1916, and 106,268 tons for the full year, 1916. A new high record in output was reached in May, 155,346 tons, but the June figures show a falling off of about 18,000 tons.

The figures as compiled by the Mines Branch of the Department of Mines at Ottawa cover the entire output of the country with the exception of two small plants.

Pig iron output, as estimated by the Mines Department from returns covering all producers, was 586,998 short tons, as against 562,097 in the first six months of 1916. The average monthly production was 97,833 tons, or only slightly higher than the average for the full year, 1916, which was 97,438 tons.

Imports from the United States have been on a considerably larger scale. The total imports of steel ingots and direct castings for the first six months of the year totaled 139,640 short tons, against 47,493 in the same period in 1916; in pig iron the increase was from 29,801 tons last year, to 38,858 tons this year.

Production figures in short tons by months this year are given as follows:

	Pig iron.	Steel ingots, etc.
January	89,187	130,090
February	83,801	120,629
March	103,789	152,420
April	101,504	139,669
May	108,790	155,346
June	99,858	137,095

COKE FREIGHT RATES.

The freight rates on coke from the Connellsville district, which includes what is officially known as the Connellsville region (sometimes called the Basin district) and the Lower Connellsville region (often called the Klondike and sometimes the Masontown district) to principal points for shipment, are as follows, per net ton of 2,000 pounds, effective June 15, 1917:

Destination.	Rate.
Baltimore	\$1.95
Buffalo	2.00
Canton	1.55
Chicago	2.65
Cleveland	1.75
Columbus	1.80
Detroit	2.25
E. St. Louis	2.95
Erie	1.80
Harrisburg	1.85
Joliet	2.65
Louisville	2.65
Milwaukee	3.00
New York	3.00
Philadelphia	2.20
Pittsburgh .....	.90
Port Henry, N. Y.	2.95
Pottstown	2.10
Reading	2.00
Richmond, Va., (B. & O.) ..	3.09
Richmond, Va. (P. R. R.) ..	3.19
South Bethlehem	2.15
Swedeland, Pa.	2.15
Toledo, O.	2.00
Wheeling	1.35
Valley Points	1.35

For Export:

From Connellsville District:	
Philadelphia (f.o.b. vessels) ..	\$1.95
Baltimore (f.o.b. vessels) ..	1.95
From Latrobe District:	
Philadelphia (f.o.b. vessels) ..	1.75
Baltimore (f.o.b. vessels) ..	1.75

Japan Largely Increasing Her Iron and Steel Output.

Consul General Seidmore at Yokohama reports that Japan is increasing her output of steel and iron, saying in part:

Projects for two new steel factories in the vicinity of Yokohama are reported by the Japan Advertiser. The Asano Steel Works are projected by Mr. Soichiro Asano, and the other plant is that of the Japan Steel Pipe Factory. Mr. Asano is the president of the Toyo Kisen Kaisha and the founder of the Asano Shipbuilding Company. His shipyards, established only 10 months ago, are now operating at full capacity. The Mitsubishi Engine and Iron Works, Nagasaki, and the Kawasaki Dockyard Company, Kobe, also have found it imperative to be able to produce their own steel. Mr. Ryoza Asano, managing director of the Toyo Kisen Kaisha, and son of Mr. Soichiro Asano has sailed for the United States, where he will investigate the steel industry and make purchases of the latest steel-producing equipment.

Must Have Independent Steel Supply.

Regarding the new Asano Steel Works, Mr. Kato, managing director and chief engineer of the Asano Shipbuilding Company, is quoted by the Advertiser as stating that the independence of the supply of steel has much to do with the independence of the shipbuilding industry of Japan.

The Japan Steel Pipe Factory, which will soon be established near Yokohama, has purchased mining rights in Nara and Fukushima prefectures with the object of getting ores.

The Japan Steel Company at Muroran, in the Hokkaido, the largest steel company in Japan, is to double its capital of \$7,477,500, according to the Advertiser.

The Japan Chronicle states that several projects have been launched in that country for establishing iron works. The Tokai Kogyo Kaisha, recently established, has bought an extensive tract of land in a suburb of Wakamatsu, where workshops are being

erected.

Another iron-manufacturing company in course of flotation is the Fuji Seiko Kaisha, with a capital of \$2,991,000. The Nippon Kotetsu Kaisha also recently invited subscriptions from the public to its capital of \$498,500. There is, besides, the gigantic project of the Kuhara family of Osaka, with a capital of \$4,985,000. Mr. Yasukawa, a well-known mine owner of Kyushu, has acquired an iron mine in China, and is arranging to establish a company with a capital of \$4,985,000 for the purpose of exploiting it. The Toyo Seitetsu Kaisha has lately increased its capital to \$14,955,000, and has bought an extensive site in Kyushu for new workshops, the building of which will be commenced in April next. When these new factories have been completed the company will be able to produce 170,000 tons of pig iron a year.

NO RAILROAD BUYING

While it is well known that the railroads have not been buying equipment of late it may be well to make a summary of what has occurred. A table appears in the **Digest** each month showing the number of cars and locomotives bought. It was only in the first three months of this year that the railroads purchased with any freedom. August and September have made the remarkable record of showing not a single freight car ordered by domestic railroads. There were some orders, but they were placed by private roads, by the Government, and by foreign buyers. Setting all domestic orders together, whether placed by regular railroads or by private lines, following is the showing for the first three months of this year and by the next six months:

	Three months.	Six months.
Domestic	27,593	15,163
Export	18,500	11,502
U. S. Ry. in France.		12,997
Total	46,093	39,662

The total cars ordered, 85,755, make a very poor showing, being at the rate of only 114,000 cars a year, against 194,000 in 1916, a moderately good year, and 125,000 in 1915, rather a poor year. Yet of the orders placed in the past six months very few indeed were by domestic railroads.

It is pertinent to observe that the Government's orders did not serve to

pull up the average materially, yet it is quite certain the Government will not be buying cars at the rate of 13,000 every couple months.

Railroad buying practically ceased when steel prices began approaching their recent top. If the buying is not resumed now, with steel prices fixed by the Government it will simply show that the limits are still too high.

Steel Plants.

XXIII.—Edgar Thomson Mills.

The Edgar Thomson plant of the Carnegie Steel Company, United States Steel Corporation, covers Braddock's Field, later called Braddock, while the distinctive railroad station now is Bessemer.

This was the site of the battle in 1755, at which America and England were opposed to the French and Indians. Now America and England are together again, but France is with them, and the Indians have been refused permission to participate. The Edgar Thompson mills are making steel for these allies and are much better equipped to do so because of recent extensions to the plant.

The original mill made Bessemer steel only and finished the steel into rails exclusively, except for billets made occasionally, many years ago and billets and sheet bars made more recently.

The program of extensions authorized by the Steel Corporation management in 1912 comprised the following additions:

14 basic open-hearth furnaces, 80 to 100 tons capacity.

New blooming mill, replacing the old one.

New No. 2 mill, replacing the former No. 2 rail mill.

The blooming mill is rather interest-

ing from its employment of turntables. The roughing department comprises two stands of 48-in. two-high rolls, arranged tandem, and driven continuously. The ingot passes through a pass in the first stand and a pass in the second stand, when it reaches a turntable which turns it around and delivers it to a return run, at the end of which it is taken by another turntable and turned around to receive a second pass in each of the two roughing stands. Thereupon it is delivered to a three-high stand with 40-inch rolls.

The new No. 2 mill comprises one train of two stands of three-high roughing rolls, a train of one stand of three-high rolls and a train of one stand of two-high finishing rolls. The product is extremely varied as to weight of section, as the mill is intended to produce rails up to 150 pounds per yard, also small blooms, while the range extends down to rod mill billets and angle splice bars. Very few rail mills roll rails much above 100-pound, as for many years that was the maximum called for.

A total of 10,000 horsepower is provided for driving the No. 2 mill, a 4,000 horsepower 50x78x60-inch tandem compound engine of 4,000 horsepower for each of the first two trains and a 2,000 horsepower 44x74x54-inch compound for the third or finishing train.

Topical Talks on Iron.

LIV.—Electric Steel.

A mild sensation was produced when the news came out after England had been at war three years that her production of electric steel had passed that of Germany, Germany having led England by a wide margin before the war. Details were lacking, of course, but it was obvious that electric steel was greatly needed in war or England would not have effected such an increase in her production.

An inkling of one use to which England has doubtless put electric steel is furnished by news of the airplanes produced. The result of the late Dr. S. R. Langley's scientific investigations of the laws of the air, completed about 30 years ago, was that a machine would fly, at say 40 or 60 miles an hour, if it could be provided with one horsepower for each 150 pounds of total weight, and that at speeds of say 80 or 100 miles an hour the weight might be increased to 250 pounds. One of the desiderata at that time was to find a trustworthy motor sufficiently light. Nothing but a frail structure, in which to house the motor, was considered, bamboo and that sort of thing.

Now it is known that England has produced airplanes weighing three tons, and carrying two and a half tons load. Descriptions are meager, but one description lets out the fact that part of the load carried is merely a "spare motor" of 300 horsepower, which gives away the fact that there is a ratio of one horsepower in service to 40 pounds total load, but the motor is such that there is actually carried 600 horsepower, so that there is carried one horsepower of motor to 20 pounds of weight, against the one horsepower to 150 pounds weight which was difficult if not impossible in Dr. Langley's day.

There is no doubt that a great deal of electric steel is employed in this construction, and it may be noted that in many of the airplanes steel tubes are used instead of wood for the wing framework not simply because it is stronger in proportion to weight, as

it doubtless is, but for the important reason that it will turn bullets that would shatter the wood.

There is a harking back to old times in personal armor, the steel helmet being a necessary accouterment in this war. The American helmet, which will be made in large numbers, will be of electric steel, and the best that can be produced, light in weight yet extremely tough and hard, and the number of tons required will run into the thousands.

The production of electric steel in the United States in 1916 was 126,048 gross tons of ingots and 42,870 tons of castings, a total of 168,918 tons, more than three times that of 1910.

The war is bringing about the growth in electric steel production that was predicted many years ago by the electric steel enthusiasts, but which did not occur in peace times because the cost of production, in actual practice, proved to be much greater than expected. Electric steel did not fail to justify the hopes entertained for it as to quality, but it did fail to justify the cost sheets that had been prepared in advance. War, however, does not count cost on the same basis as peace.

The electric steel of commerce, of course, has nothing to do with the various processes for electric smelting of iron ore, producing iron or steel from the ore. The great bulk of the electric steel produced is made from the product of the Bessemer converter or open-hearth furnace as the raw material. It is really steel refined in an electric furnace, although production by the use of scrap, used cold or pre-melted, has some vogue. The function of the electric current is simply to produce an extremely high temperature. Broadly speaking, if the same temperature could be produced by other means, but under otherwise identical conditions, the result would be the same. There is no particular virtue in the current except its power to produce the high temperature.

The Iron and Steel Price Basis.

The initial prices set for the iron and steel trade by the Government's announcement of September 24th, with the average prices in the ten years 1904 to 1913 inclusive and the percentage of advance, are as follows:

	Fixed.	Average.	Advance.
Iron ore	\$5.05	\$3.36	50%
Coke	\$6.00	\$2.21	172%
Pig iron ...	\$33.00	\$15.68	110%
Bars	2.90c	1.403c	106%
Shapes	3.00c	1.510c	99%
Plates	3.25c	1.496	117%

The iron ore is Mesabi non-Bessemer at Lake Erie dock, meaning that all Lake Superior iron ore prices are to be the same as for the season of 1917, but this is subject to change in the regular Lake freight from the \$1.00 rate that obtained for 1917. The rate will in all probability not be higher, but it is

rather improbable that it will be lower.

The coke price is assumed to represent Connellsville furnace coke as a basis. The average quoted above the average of the Connellsville Courier's annual averages, these being based upon estimates of actual realized prices for the year's output that was sold in the open market, counting the contracts as well as the spot sales, and also including the small proportion of foundry coke, which brought more than furnace coke.

The pig iron taken is foundry iron at valley furnaces, and in pig iron as well as bars, shapes and plates, the averages taken are from our **Metal Statistics**, representing averages compiled from daily quotations.

It is obvious that the price basis is a high one. It is well known that costs have not advanced in anything like such a ratio.

Steel Prices and Deliveries.

While accurate and precise data are never available as to the average invoice price of the finished steel products being delivered at any given time, there is reason to believe that the average invoice price of late has not been much above the general price level now being set, precise prices having already been agreed upon for bars, shapes and plates, while prices on other commodities are to be worked out in relation to these basis prices.

There is no doubt that in the case of some large mills, possibly all or nearly all, the average invoice price of the bars, shapes and plates now being shipped is lower than the agreed prices of 2.90c for bars, 3.00c for shapes and 3.25c for plates. Indeed, it is admitted by some mills that such is the case.

This is not what would be assumed on the basis of market price history. The openly quoted market reached 3.25c on plates on the 24th of last October, and 2.90c on bars and 3.00c on

plates on the 21st of last November, or more than from ten to eleven months ago. At that time the mills were not reported as being filled up for such a length of time. Evidently there has been the phenomenon so familiar in previous rises, that in a rising market low priced contracts have a longevity much greater than would have been expected by a scrutiny of their expressed terms. Through long practice buyers have developed methods of keeping such contracts alive. The mills have made sales at prices higher than those now fixed, but the particularly old contracts have been pulling down the average.

In the case of the smaller mills, those which do not sell for deliveries nearly as far ahead as those of the large mills, the average invoice prices are much higher. Last June, for instance, there were plates being sold at higher than eight cents, for deliveries in from three to six months. In this case the ten-

dency has been, perhaps, for the average invoice price to come down, as the market became less and less active as the weeks passed.

Thus the principal result of the fixing of prices will be to avoid further increases in costs to consumers of steel products, rather than to reduce their present costs. Likewise, there is no reason to expect that there will be decreases in the earnings of the large steel companies, though there will be some decreases, doubtless, in the earnings of the smaller companies, which have been making a great deal more per ton than the largest interests. Such earnings would not always show on their books, when taken as profits per ton of finished product, but that is not the way to figure, in the case of a producer of finished steel which is not integrated. If this concern buys its pig

iron, it has correspondingly less capital investment, and the proper comparison would be to take an integrated company on the one hand, and on the other the group of non-integrated companies that contribute to the finished steel, the coke works, the ore mine, the blast furnace and the steel mill.

In the case of the Steel Corporation it is well known that its average realized prices on shipments have been increasing continuously to date, and likewise its profits per ton. The earnings per ton in September were undoubtedly greater than the earnings in June, and it is far from improbable that there will be some further increases. It is quite certain that with fairly full operation the earnings are likely to be materially greater than they were in the June quarter.

The "It Can't Be Done" Man.

The "it can't be done" man should be given the cold shoulder. He should be ostracized. In fact, he should be "canned". He should be made into a "can" man. "Cant" is not the word for to-day. Some definitions from Webster: A whine; a pet expression; empty speech implying what is not done; to deceive by false pretenses; to scold.

We have improved somewhat in a century. We reflect comfortably that an American crowd would not jeer to-day as an American crowd did a century ago over the mishaps of Fulton's boat on its trial trip. The crowd to-day would hope that it could be done. But we must go farther.

Suppose General Joffre had said at the Marne "It can't be done". Suppose General Pershing should now send word to his commander-in-chief, "It can't be done". Suppose the commander-in-chief should say "it can't be done" and resign. Suppose that we should decide we can't win the war. We are in the war and we must win as fully and as speedily as possible. There must be no "can't", with or without the apostrophe.

A year ago we had the "it can't be

done" man about American airplanes. It would take three years, but we are building Liberty motors, as good as any in the world, probably better, and building them fast. We had him about transportation; the railroads were congested and could not move troops. We had him about the 500,000 Germans, not seeing Gerard's 501,000 lamp posts. Those "can't be done" men are gone. There are others who must go.

The trouble with the "can't be done" man is that he does not have vision. He whines and scolds. We had him in steel. Prices could not be fixed. Competition must rule. He did not see that competition between sellers had disappeared. It is competition between buyers, for which there is no economic justification at this time.

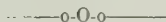
The man is dogged. Driven from one line he falls back on his second line, or a third. Steel prices could not be fixed, but they are being fixed. Now he says it won't work. Why, he tried to place an order yesterday at the fixed price and no mill would accept it.

That reminds us of a story. The late Tom L. Johnson ran for Mayor of Cleveland on a municipal ownership of

public utilities platform. The morning after he was elected the illiterate started riots on the street cars. The conductors actually tried to collect a nickel apiece, when Tom Johnson had been elected! The main difference between that and this is the degree of illiteracy admitted.

Steel prices are going to be fixed. The work is intricate and complicated, but it is not difficult. The poorest schedule that the experts could produce would be infinitely better than the crazy price structure that the open market develop-

ed. We are going to win the war, we are going to train, equip and maintain an army, we are going to build tens of thousands of airplanes, scores of destroyers, millions of tons of shipping, and we are going to fix steel prices and control the manufacture, distribution and consumption. It is all one. It is winning the war. Don't whine. Don't scold. Help to get rid of the "it can't be done" man. The biggest blow you can give him is to refuse to listen. That is the weakest spot in his psychology.



The Iron and Steel Situation.

Feature of September—Government Price Fixing Inaugurated.

Ordinarily we have begun this monthly review with a notation of several features which characterized the month, and this has been possible even in the case of months that would in a general way be denominated "featureless".

In September there was but one feature, one of the greatest events in steel market history. The Government inaugurated a system of price fixing for the industry. Briefly, the operation was as follows:

On Friday, September 21st, nearly all the prominent manufacturers assembled in Washington to meet with the War Industries Board. More than 80% of the iron and steel capacity was represented. The Board made an earnest plea that the manufacturers get in harmony with the Government, endorse the doctrine of "one price for all", the Government, our Allies and the general public, and agree upon a schedule of prices that would be satisfactory to the Government. The Board then withdrew and the manufacturers discussed matters. It looked as though an agreement could not be reached among the manufacturers that the Government would accept, but practically at the last moment a schedule was formulated, according to the counsels of the most conservative present. This was presented to the War Industries Board for submission to the President. The following afternoon the manufacturers were privately advised that the schedule had been accepted by the President except that he had cut down the coke price by 50 cents. The prices were announced Monday afternoon, September 24th, by the Committee on Public Information, and are explained and compared with ten year averages on a preceding page in this issue, the prices being: Iron ore, \$5.05; pig iron, \$33; bars, 2.90c; shapes, 3.00c; plates, 3.25c; coke, \$6.00.

In the case of iron ore, pig iron and steel the procedure represented a voluntary agreement between the Government and the manufacturers. In coke there was an agreement, except for the 50 cents mentioned, but the President

had authority under the Lever act to fix coke prices absolutely, and for all buyers. In the case of iron and steel he had authority only with respect to purchases made by the Government.

It is commonly said that this inauguration of price fixing was a very great event, and one fraught with the most momentous consequences. No doubt such was the case, yet it must be observed that after all it was the circumstances that occasioned the price fixing that were so unique. The market had worked itself into an impossible position. Prices were so extremely high that general buying had practically ceased months before. While there was a scarcity of steel it was only a temporary scarcity. For two months, August and September, the regular railroads have not bought a single freight car, and in nine months they have bought only a very limited number. Lettings of structural steel contracts amounted in August to only 38% of the fabricating capacity. It was perfectly evident to everyone at all familiar with the industry, and not blinded by the feverish and unreasoning buying of the past, that the steel market was clearly marked for a smash some time, the only question being of the number of months that would elapse.

Agreement Unexpected.

In our last report we observed that the trade was in daily expectation of a price announcement at Washington, referring to prices the Government would pay upon its purchases, and it was remarked: "Some think the Government will undertake to fix prices for the general market. Others, the great majority, think not." That statement was correct. Even after the meeting of September 21st had assembled the majority of opinion of those present was that a "one price for all" agreement could not be reached.

The agreement was due in the first place to the insistence of President Wilson upon the adoption of the one price principle, and second to the strength

earnings that before the second year of the war would have been considered altogether phenomenal, or rather impossible.

Bars, shapes and plates, upon which prices were fixed in the initial agreement, constitute about one-half the total tonnage product of the steel industry. The prices furnish a clear and substantial basis from which to compute prices for other steel products. The task of determining such prices is scarcely intricate and it cannot be regarded as difficult. Any fairly well posted person could draw up a schedule that would be immeasurably more consistent than the crazy price structure open competition had built up. The competition referred to is not the familiar kind, competition between sellers. It was competition between buyers, unreasonable, cut-throat competition. Left to its own devices it would have

At no time did the arranging of details seem difficult; the difficulty was to reach a basis, which should indicate the average level for prices and thus fix the amount of profit to be vouchsafed the manufacturers. Even the reaching of the basis, however, did not prove so very difficult, for the prices sanctioned by the Government are really very high. They are, as shown by a preceding article in this issue, more than double the average quoted market in the ten years preceding 1914. They are higher than the average prices realized on the shipments of the large steel producers during the past few months, and on which they have made

(Averaged from daily quotations; at Philadelphia, Buffalo, Cleveland and Chicago, prices are delivered.)

	Bessemer	Basic, Valley	No. 2 fdy.	Basic, Phila.	No 2 X fdy. Phila. Buffalo.	Cleve- land.	No. 2 fdy. Chi- cago.	Ferro- mangan- ese.*	Fur- nace coke x		
1916.											
Jan. ..	21.00	18.00	18.50	19.24	19.71	18.25	18.80	19.00	14.92	115.40	3.14
Feb. ..	20.50	17.88	18.50	19.50	19.75	18.25	18.80	19.00	14.64	139.00	3.4
Mar. ..	20.67	18.48	18.50	19.60	19.77	18.77	18.86	19.24	15.00	175.00†	3.45
April ..	21.00	18.48	18.50	20.50	20.20	19.25	19.00	19.50	15.00	175.00	2.45
May ..	21.00	18.21	18.44	20.50	20.25	19.15	19.08	19.50	15.00	175.00	2.34
June ..	21.00	18.25	18.39	19.90	20.04	18.75	19.30	19.50	14.63	175.00	2.54
July ..	21.00	18.00	18.25	19.15	19.75	18.75	18.80	19.50	14.00	175.00	2.65
Aug. ..	21.00	18.00	18.27	19.00	19.58	18.75	18.57	19.17	14.00	175.00	2.75
Sept. ..	21.32	18.27	18.58	19.50	19.50	19.04	18.67	18.75	14.38	165.00	2.94
Oct. ..	23.81	20.17	20.56	20.52	20.58	20.48	19.87	19.79	15.35	165.00	5.69
Nov. ..	29.40	24.80	25.60	24.68	25.00	27.31	24.58	25.70	19.72	165.00	6.91
Dec. ..	34.84	29.84	29.84	29.84	30.27	33.81	30.48	29.34	23.38	170.00	9.00
Year ..	23.05	19.87	20.16	10.96	21.20	20.67	20.40	20.67	15.85	164.12	3.94
1917.											
Jan. ..	35.00	30.00	30.00	30.00	31.48	35.25	30.95	30.50	24.27	175.00	9.44
Feb. ..	35.00	30.00	30.00	30.45	31.96	35.25	31.78	31.42	24.13	210.00	10.57
Mar. ..	36.70	31.93	34.96	33.93	37.01	35.81	36.21	35.65	29.67	270.00	9.58
April ..	41.36	38.52	39.16	39.40	41.75	40.09	39.30	39.34	33.76	325.00	8.00
May ..	44.12	41.46	42.65	40.75	43.67	43.33	41.49	43.15	36.62	400.00	8.40
June ..	53.50	49.23	46.50	46.86	46.90	46.90	48.99	50.04	40.92	400.00	11.20
July ..	55.56	53.52	53.00	53.15	52.75	50.89	54.30	55.50	45.36	400.00	12.32
Aug. ..	54.26	51.70	53.00	51.25	52.75	50.25	54.30	55.50	45.00	375.00	13.42
Sept. ..	48.13	43.80	47.68	48.75	52.11	52.61	54.30	55.50	45.00	360.00	11.85
* Contract	price	delivered;	†	At	seq.,	domestic,	delivered.	x	Prompt.	f.o.b.	Connellsville

caused immense losses to many consumers of steel.

Government Buying.

The immediate result of the agreement, marketwise, is simply that a large amount of Government buying is made feasible. An eminent authority estimates the tonnage to be placed at 7,000,000 tons, within say 60 days, for 1918 delivery, on behalf of the Government and its Allies. The major portion would probably be for the Allies, who have bought little during the past few months, yet took in the neighborhood of 15% of last year's production in one form or another. The Government has placed a large part of its own tonnage already, as it was in position to allot orders subject to subsequent price adjustment. It could do this on behalf of the Allies.

Only very rough estimates can be made as to the proportion of war steel to total steel. Production of finished rolled steel in 1916 was 30,500,000 gross tons. Of late production has been at

the rate of about 33,000,000 tons, while there is capacity to produce more than 35,000,000 tons. The 7,000,000 tons would constitute a trifle less than 20% of a year's output at capacity. Including orders already placed and orders to be placed later, the total of war steel will more likely than not fall between 30 and 35% of production at capacity, though it is improbable that capacity operations can be attained. This would compare with about 15% of last year's smaller production, and one must take into account the fact that exports to neutrals will amount to practically nothing, so that the supply to the domestic trade, in point of tonnage, will be very large. The tonnage will not be properly distributed among the different products, as the rolling industry is highly specialized. Some rolled products will be very scarce, others relatively plentiful.

The Future.

Something has been done, but it would probably be a serious error to as-

Finished Steel Prices.

(Averaged from daily quotations, f.o.b. Pittsburgh.)

	Shapes	Plates,	Bars,	Pipe,	Wire,	Grooved		Sheets			Tin plate.	Comp. Fin. steel.
						Wire Nails.	Steel Skelp.	Black.	Galv.	Blue Annld.		
1916.												
January	1.87	1.90	1.87	76 $\frac{3}{4}$	1.98	2.13	1.75	2.60	4.75	2.55	3.75	2.1410
February ..	2.06	2.16	2.06	75 $\frac{1}{2}$	2.11	2.26	1.94	2.60	4.80	2.65	3.83	2.2988
March	2.36	2.53	2.36	73 $\frac{3}{8}$	2.25	2.40	2.24	2.73	4.93	2.85	4.20	2.5579
April	2.50	2.75	2.50	71 $\frac{1}{2}$	2.25	2.40	2.35	2.89	5.00	2.95	4.70	2.7166
May	2.50	2.83	2.50	70	2.45	2.50	2.35	2.90	5.00	3.00	5.46	2.8043
June	2.50	2.90	2.50	70	2.45	2.50	2.35	2.90	4.80	3.00	5.75	2.8300
July	2.50	2.90	2.50	70	2.45	2.50	2.35	2.90	4.40	2.90	6.00	2.8425
August ...	2.54	2.94	2.56	70	2.53	2.58	2.35	2.90	4.20	2.90	5.54	2.8588
September .	2.60	3.00	2.60	69 $\frac{1}{4}$	2.55	2.60	2.35	2.91	4.20	2.90	5.75	2.9013
October ...	2.63	3.07	2.62	69	2.59	2.64	2.40	3.23	4.50	3.15	5.77	2.9747
November .	2.86	3.33	2.76	68 $\frac{1}{2}$	2.79	2.84	2.75	3.72	5.34	3.66	6.40	3.2036
December ..	3.03	3.53	2.93	66	2.95	3.00	2.85	4.40	6.27	3.65	7.18	3.4679
Year	2.50	2.82	2.48	70 $\frac{7}{8}$	2.45	2.53	2.34	3.06	4.85	2.99	5.34	2.8009
1917.												
January	3.11	3.61	3.00	64	2.95	3.00	2.85	4.50	6.50	4.25	7.23	3.5249
February ...	3.25	3.75	3.00	62 $\frac{7}{8}$	2.95	3.00	2.85	4.63	6.75	4.50	7.83	3.6529
March	3.52	4.33	3.27	60 $\frac{1}{4}$	3.13	3.18	3.50	4.90	7.00	4.70	8.00	3.9454
April	3.70	4.50	3.39	55	3.23	3.28	3.50	5.88	7.40	5.40	7.60	4.1965
May	4.00	4.50	3.64	49	3.45	3.50	3.75	6.73	9.00	6.70	8.00	4.5272
June	4.25	7.10	4.00	49	3.66	3.71	5.00	7.50	9.75	8.00	8.00	5.1587
July	4.50	9.00	4.50	42	3.95	4.00	6.00	8.00	10.50	8.25	8.00	5.7975
August ...	4.50	8.96	4.50	43 $\frac{1}{2}$	3.95	4.00	5.50	8.00	10.35	8.00	8.00	5.7161
September .	4.06	7.05	3.88	49	3.95	4.00	5.00	8.00	9.75	8.00	8.00	5.1865

sume for a moment that a basis or foundation has been reached by which the market can continue in a normal course. That would be impossible. The Priority Board will determine the sequence in the filling of orders. It may be no advantage to a consumer that his order has long been on mill books. Forward buying will not have the incentive usually furnished by the prospect of delivery. It will not have the incentive that prices may later advance. It is commonly believed that any modification of prices in future will be in the direction of a reduction. As to the generality of buying, there will be no incentive to buy except for quite early deliveries. Such cannot now be secured. The trade must pass through a transitional period of months, during which the volume of business on mill books is reduced.

There is no likelihood that this system of price-control, as now hastily adopted, will work smoothly or be permanent. It rests on an agreement heartily endorsed by representatives of four-fifths or more of the productive capacity, but they cannot bind all. There may be those who will ignore an agreement in which they did not participate and in due time they will have to be dealt with. There will be legislation to deal with them, if necessary.

Then there may be a disposition on the part of some to insist upon prices for their products not in keeping with the basis agreement. If the remaining prices to be fixed turn out to be disproportionately high that situation will also have to be dealt with.

While all parties are more or less in

accord as to general principles to be observed, there are likely to be notes of discord. In some quarters the idea is suggested that some prices should be set proportionately higher than others "in order to stimulate production". That is not admissible. The whole basis is assumed to be high enough to stimulate production, and to make a special distinction in favor of certain commodities would in substance be to offer manufacturers a larger profit on material required for the war than on material not so required, a larger profit on Government material than on private material, so that such a principle cannot be countenanced.

There must be the heartiest co-operation with the Government. Apart from patriotic duty there is the moral obligation of a bargain. The Government agreed to pay higher prices for its material than it contemplated, in order that purchases by others should be at the fixed prices. It was a case of give and take. The Government carries out its part of the bargain, by placing large orders at the agreed prices. The producers must carry out their part.

The prices as adopted are understood to be binding until January 1st, when they may be modified. By that time or soon afterwards it is probable there will be legislation on the subject of iron and steel price fixing, as all indications are that the Pomerene bill, as recently amended to make it stronger and to remove the danger of unconstitutionality, will be passed early at the regular session of Congress, which convenes December 4th.

Comparison of Metal Prices.

	Range for 1915		Range for 1916		Range for 1917		Closing, Sept. 30,
	High.	Low.	High.	Low.	High.	Low.	1917.
Pig Iron.							
Bessemer, valley	21.00	13.60	35.00	20.00	56.00	35.00	36.30
Basic, valley	18.00	12.50	30.00	17.75	54.00	30.00	33.00
No. 2 foundry, valley	18.50	12.50	30.00	18.25	53.00	30.00	33.00
No. 2X fdy. Philadelphia.	19.50	14.00	30.75	19.50	52.75	30.75	33.75
No. 2 foundry, Cleveland .	18.80	13.00	30.95	18.50	54.30	30.95	54.30
No. 2X foundry, Buffalo.	18.00	11.75	35.00	18.00	53.00	35.00	51.00
No. 2 foundry, Chicago ..	18.50	13.00	30.00	18.00	55.00	30.00	55.00
No. 2 South'n Birmingham	14.50	9.25	25.00	14.00	48.00	24.00	45.00
Scrap Iron and Steel.							
Melting steel, Pittsburgh.	18.00	11.00	27.00	16.00	47.00	22.00	32.00
Heavy steel scrap., Phila. .	16.25	9.50	24.50	14.75	42.00	20.50	31.00
Heavy melt. steel, Chicago	15.25	8.75	24.00	14.50	43.00	21.50	30.00
No. 1 R. R. wrought, Pitts.	17.25	10.75	29.00	17.50	47.00	19.50	31.00
No. 1 cast, Pittsburgh	15.00	11.00	23.50	14.75	38.00	19.75	30.50
Iron and Steel Products.							
Bessemer rails, mill	28.00	28.00	38.00	28.00	38.00	38.00	38.00
Iron bars, Pittsburgh	1.90	1.20	3.25	1.90	5.25	3.25	4.75
Iron bars, Philadelphia ..	2.06	1.12½	3.16	2.06	5.16	3.16	4.94
Steel bars, Pittsburgh	1.80	1.10	3.00	1.85	4.50	2.90	2.90
Tank plates, Pittsburgh ...	1.60	1.10	3.60	1.85	9.00	3.25	3.25
Structural shapes, Pitts. .	1.80	1.10	3.10	1.85	4.50	3.00	3.00
Grooved steel skelp, Pitts..	1.75	1.12½	2.85	1.75	6.00	2.85	5.00
Black sheets, Pittsburgh ..	2.60	1.70	4.50	2.60	9.00	4.50	8.00
Galv. sheets, Pittsburgh ..	5.00	2.65	6.50	4.15	11.00	6.25	9.50
Tin plate, Pittsburgh	3.60	3.10	7.50	3.75	8.50	7.00	8.25
Wire nails, Pittsburgh	2.10	1.50	3.00	2.10	4.00	3.00	4.00
Steel pipe, Pittsburgh	79%	81%	64%	78%	42%	64%	49%
Connellsville Coke at ovens.							
Prompt furnace	3.50	1.50	12.00	2.50	16.00	6.00	6.00
Prompt foundry	3.75	2.00	12.00	3.25	16.00	6.00	6.00
Metals—New York.							
Straits tin	57.00	32.00	56.00	37.50	66.50	42.50	61.87½
Lake copper	23.00	13.00	36.00	23.00	37.00	27.00	*27.37½
Electrolytic copper	23.00	12.80	36.00	23.00	37.00	25.50	*25.56¼
Casting copper	22.00	12.70	34.00	22.00	34.00	25.00	*26.43¾
Sheet copper	27.25	18.75	42.00	28.00	44.00	36.00	37.00
Lead (Trust price)	7.00	3.70	7.50	5.50	11.00	7.50	8.00
Spelter	27.25	5.70	21.17½	8.37½	11.50	7.92½	8.37½
Chinese and Jap. antimony	40.00	13.00	45.00	10.50	36.00	14.00	15.25
Aluminum, 98-99%	60.00	18.75	67.00	53.00	64.00	40.00	41.00
Silver	56½	46¼	77¼	55¾	108½	79	96½
St. Louis.							
Lead	7.50	3.50	8.25	5.45	12.00	7.30	7.92½
Spelter	27.00	5.55	21.00	8.20	10.87½	7.75	8.20
Sheet zinc (f.o.b. smelter)	33.00	9.00	25.50	15.00	21.00	19.00	19.00
London.							
Standard tin, prompts	190	148¼	205	161½	256½	180¾	245¼
Standard copper, prompts	86¾	57¾	153	84	146	110	110
Lead	30¼	18¼	36½	27¾	30½	30½	30½
Spelter	110	28¾	110	44	55	45½	54
Silver	27¼d	22½d	37d	26½d	55d	35½d	49d

* Closing September 20th; no market thereafter.

Comparison of Security Prices.

	Range for 1915		Range for 1916		Range for 1917		Closing, Sept. 30,
	High.	Low.	High.	Low.	High.	Low.	1917.
Iron and Industrial Stocks.							
Allis-Chalmers Mfg.	49½	7¾	38	19	32½	20½	24
Allis-Chalmers Mfg. pfd.	85½	33	93	70½	86½	79¼	84
American Can	68½	25	68½	44	53	36	43½
American Can pfd.	113½	89	115½	107½	111½	100½	102½
American Car & Fdy.	98	40	78½	52	80½	57	70½
American Locomotive	73¾	19	98¼	58	82¾	57½	60¾
American Smelt'g & Refining	108½	56	123¾	88½	112¾	90½	97½
American Steel Foundries ..	74½	24½	79	44	75½	52	65
American Zinc, Lead & Smelt'g	71	67¼	97½	29½	41½	15	18
Anaconda Copper	91½	49½	105½	77	87	64½	70½
Baldwin Locomotive	154½	26½	118½	52	76½	43	62
Bethlehem Steel	600	46¾	700	415	515	93	96½
Bethlehem Steel pfd.	184	91	168	126	135	95½	95½
Chino Copper	57½	32¾	74	46½	63¾	48½	50½
Colo. Fuel & Iron Co.	66½	21¾	63¼	38½	58	38½	43½
Crucible Steel	109½	18¼	99½	50¼	91½	50½	70¾
Crucible Steel pfd.	112½	84	124½	108¼	117¾	95	95
Driggs-Seabury .....	...	...	119¾	45½	87½	39½	72
General Electric	185½	138	187¼	159	171¾	135¾	141½
Granby Consolidated	91	79¼	120	80	92½	75½	80
Great Northern Ore Prop. ..	54	25¼	50¾	32	38½	27¾	33½
Gulf States Steel .....	...	...	193	71	137	92½	95¼
International Harv. of N. J.	114	90	126½	108½	123	107½	111
Inter. Harv. of N. J. pfd. ...	85	55	122	114	121	111½	111½
International Harv. Corp. ...	114	90½	90¼	68½	88	65	70
Inter. Harv. Corp., pfd. ...	120	100	114¾	104½	114	101	105½
Lackawanna Steel	94¾	28	107	64	103½	70½	81¾
National Enam. & Stamp....	36½	9½	36½	19¾	45¾	24	43
National Enam. & Stamp. pfd.	97	79	100½	90½	101	90½	93½
National Lead	70¾	44	74½	57	63¾	49¼	49¼
National Lead, pfd.	115	104¾	117½	111¼	114	101	104
New York Air Brake	164¾	56½	186	118	156	117½	122
Pressed Steel Car	78¼	25	88¼	42½	83¼	58	60
Pressel Steel Car, pfd.	106	86	108	8½	106	99½	100
Railway Steel Spring	54	19	61¾	32	58	43	46½
Railway Steel Spring pfd. ..	102	86½	104¾	95¼	101	94	97
Ray Consolidated Copper	27½	15¼	37	20	32¾	23	25½
Republic Iron & Steel	57¾	19	93	42	94½	60	80¼
Republic Iron & Steel, pfd...	112½	72	117	101	105½	99	100½
Sloss-Sheffield	66½	22	93¼	37	74¾	42	45
Sloss-Sheffield, pfd.	102	85	103½	91½	99	88¼	88¼
Texas Company	237	120	241½	177¾	243	156½	165
U. S. Cast Iron Pipe	31½	8	28½	16½	24½	16	17½
U. S. Cast Iron Pipe pfd.	55½	32½	67½	48½	62¾	50	50
U. S. Smelting & Refining ..	...	...	81½	57	67¾	52½	62
U. S. Smelting & Refining pfd. ...	...	...	53½	50	52¼	49	49½
U. S. Steel Corporation	89½	38	129¾	79¾	136½	99	109
U. S. Steel Corporation, pfd.	117	102	123	115	121¼	115½	117
Utah Copper	81¾	48½	130	73¾	118¾	89¾	93½
Virginia Iron, Coal & Coke..	74	36	72¾	41	77	46	60
Westinghouse Elec. & Mfg. ..	74½	32	71½	51¼	56	43¼	46

Railroad Earnings.

Per mile of road, compiled by Bureau of Railway Economics.

	1913-14			1914-15			1915-16		
	Revenue.	Expense.	Net.	Revenue.	Expense.	Net.	Revenue.	Expense.	Net.
July	\$1,183	\$837	\$346	\$1,127	\$786	\$341	\$1,130	\$750	\$380
August ..	1,244	856	388	1,174	788	386	1,190	764	426
September	1,257	854	403	1,185	783	402	1,251	774	477
October .	1,314	891	423	1,171	787	384	1,323	815	508
November	1,180	884	297	1,026	734	292	1,303	801	502
December.	1,116	821	296	993	730	263	1,253	802	451
January ..	1,021	795	226	939	718	221	1,133	798	335
February .	914	746	168	900	680	220	1,141	801	340
March	1,091	801	290	1,015	722	293	1,260	844	416
April	1,038	782	256	1,013	724	289	1,223	827	396
May	1,047	800	247	1,044	735	309	1,306	856	450
June	1,097	789	308	1,094	732	362	1,301	851	450
Fiscal year	13,483	9,801	3,682	12,678	8,915	3,763	14,818	9,684	5,134

1916-17

	Revenue.	Expenses.	Net.
July	\$1,315	\$848	\$467
August ..	1,418	882	536
September	1,409	881	528
October .	1,466	910	556
November	1,396	894	502
December	1,345	905	440
January ..	1,301	930	371
February.	1,147	899	248
March ...	1,373	992	381
April	1,383	986	397
May	1,498	1,034	464
June	1,514	1,020	494
Fiscal yr.	16,565	11,181	5,384

Wage Scale Averages.

Sworn averages of prices obtained by mills for shipments in months named, used in fixing wages under Amalgamated Association sliding scales.

Bar Iron.

	1914.	1915.	1916.	1917
Jan.-Feb.	1.1590	1.024	1.40	2.35
Mar.-April	1.176	1.087	1.60	2.45
May-June	1.1257	1.10	1.85	2.65
July-Aug.	1.0928	1.15	1.95	2.75
Sept.-Oct.	1.0847	1.15	2.00	
Nov.-Dec.	1.037	1.30	2.15	
Year's av.	1.1125	1.144	1.83	

Sheets and Tin Plates.

	Sheets.		Tin Plates.	
	1916.	1917.	1916.	1917.
Jan.-Feb.	2.25	3.40	3.50	4.95
Mar.-April	2.50	3.90	3.70	5.75
May-June	2.60	4.45	3.90	6.85
July-Aug.	2.70	5.00	4.05	7.75
Sept.-Oct.	2.75		4.10	
Nov.-Dec.	2.80		4.25	
Year's av.	2.60		3.92	

Pig Iron Production.

Rates per annum, including charcoal pig.

August	39,200,000
September	39,300,000
October	41,700,000
November	40,700,000
December	37,700,000
January, 1917	37,460,000
February	34,750,000
March	38,600,000
April	40,900,000
May	40,600,000
June	37,200,000
July	39,700,000
August	38,600,000
September	38,500,000
On October 1st	39,500,000
Average since January 1st.....	38,750,000

Actual production:

1910	27,503,567
1913	30,966,152
1914	23,332,244
1915	29,916,213
1916	39,434,797

Composite Steel.

Computation for October 1, 1917:

Pounds.	Group.	Price.	Extension.
2½	Bars	2.90	7.250
1½	Plates	3.25	4.875
1½	Shapes	3.00	4.500
1½	Pipe (¾-30)	5.00	7.500
1½	Wire nails	4.00	6.000
1	Sheets (28 lb.)	8.00	8.000
½	Tin plates	8.00	4.000
10 pounds			42.125
One pound.....			4.2125

Averaged from daily quotations:

	1913.	1914.	1915.	1916.	1917.
Jan.	1.7737	1.5394	1.4554	2.1410	3.5525
Feb.	1.7625	1.5794	1.4716	2.2988	3.6529
Mar.	1.7646	1.5638	1.5098	2.5579	3.9454
April	1.7742	1.5337	1.5357	2.7165	4.1965
May	1.7786	1.5078	1.5381	2.8043	4.5272
June	1.7719	1.4750	1.5312	2.8300	5.1587
July	1.7600	1.4805	1.5692	2.8425	5.7975
Aug.	1.7400	1.5241	1.6059	2.8588	5.7161
Sept.	1.7093	1.5632	1.6506	2.9013	5.1865
Oct.	1.6779	1.5236	1.7264	2.9747	
Nov.	1.6203	1.4769	1.9089	3.2036	
Dec.	1.5556	1.4324	2.0329	3.4679	
Year	1.7241	1.5182	1.6280	2.8009	

Scrap Iron and Steel Prices.

Melting Bundled No. 1 R. R. No. 1 No. 1 Heavy
Steel. Sheet Wrought Cast. Steel. Melting.
Pitts. Pitts. Pitts. Pitts. Phila. Ch'go.

Averaged from daily quotations:

1916—						
Feb.	17.20	13.60	18.75	15.35	16.25	15.75
Mar.	18.40	14.80	19.15	15.75	17.15	16.75
Apr.	18.00	14.75	19.25	16.00	18.00	16.75
May	17.00	13.65	19.65	16.10	17.00	15.90
June	16.25	13.00	19.00	15.40	15.45	14.80
July	16.70	12.50	18.80	15.30	15.00	14.30
Aug.	16.25	11.70	18.15	15.00	15.00	15.30
Sep.	16.61	11.65	18.35	15.00	15.00	16.00
Oct.	18.25	11.65	19.30	15.80	15.65	17.35
Nov.	22.50	13.75	21.25	17.75	18.25	21.00
Dec.	25.50	16.00	27.20	21.40	23.95	23.65
Year	18.37	13.38	19.73	16.16	16.92	16.90
1917—						
Jan.	23.50	16.25	23.75	20.75	22.75	23.50
Feb.	22.50	15.75	22.50	19.75	21.15	22.25
Mar.	24.00	16.25	26.00	22.00	23.00	24.30
Apr.	27.75	17.25	30.50	24.00	25.50	27.30
May	29.25	19.25	33.00	25.25	26.50	29.00
June	40.75	24.00	40.50	32.25	34.50	38.50
July	38.75	25.35	44.00	33.50	36.00	35.50
Aug.	34.00	24.15	36.00	30.50	31.50	32.10
Sept.	34.00	23.25	32.00	31.00	32.00	32.00

Composite Pig Iron.

Computation for October 1, 1917:

One ton Bessemer, valley	\$36.50
Two tons basic, valley (33,000)	66.00
One ton No. 2 foundry, valley	33.00
One ton No. 2 foundry, Philadelphia	33.75
One ton No. 2 foundry, Buffalo	51.25
One ton No. 2 foundry, Cleveland	54.30
One ton No. 2 foundry, Chicago	55.50
Two tons No. 2 Southern foundry,	
Cincinnati (47,900)	95.80
Total, ten tons	425.90
One ton	42.59

Averaged from daily quotations:

	1913.	1914.	1915.	1916.	1917.
Jan.	17.391	13.492	13.070	18.690	30.752
Feb.	17.140	13.721	13.079	18.564	30.946
Mar.	16.775	13.843	12.971	18.857	34.353
April	16.363	13.850	12.914	19.021	39.140
May	15.682	13.808	13.206	18.965	42.037
June	14.968	13.606	13.047	18.552	48.160
July	14.578	13.520	13.125	18.585	52.556
Aug.	14.565	13.516	14.082	18.514	51.927
Sept.	14.692	13.503	14.895	18.697	49.373
Oct.	14.737	13.267	15.213	20.192	
Nov.	14.282	13.047	16.398	25.243	
Dec.	13.838	13.073	17.987	30.082	
Year	15.418	13.520	14.150	20.306	

Unfinished Steel and Iron Bars.

(Averaged from daily quotations.)

	Billets. Pitts.	Sheet Bars. Pitts.	Rods. Pitts.	—Iron bars, deliv. — Phila. Pitts. Ch'go.		
1916—						
Feb.	34.00†	34.00†	48.00	2.41	2.25	1.92
Mar.	41.00†	41.00†	56.00	2.56	2.40	2.17
Apr.	45.00	45.00	60.00	2.62	2.50	2.35
May	43.00	43.00	59.00	2.66	2.60	2.35
June	42.00†	42.00†	58.00	2.66	2.60	2.35
July	42.50†	42.50†	58.00	2.66	2.60	2.35
Aug.	46.00	46.00	58.00	2.66	2.60	2.35
Sep.	47.00	45.00	58.00	2.66	2.70	2.35
Oct.	48.00	48.00	59.00	2.66	2.75	2.35
Nov.	52.75	54.00	65.00	2.66	2.85	2.50
Dec.	56.96	56.96	70.00	3.02	3.19	2.89
Year	44.23	44.17	57.58	2.57	2.59	2.31
1917—						
Jan.	63.50	63.50	75.00	3.16	3.25	3.00
Feb.	65.00	65.00	77.00	3.16	3.25	3.00
Mar.	68.00	68.00	79.00	3.41	3.46	3.00
Apr.	75.00	75.00	85.00	3.41	3.62	3.25
May	88.00	94.00	93.00	4.16	3.90	3.40
June	95.00	105.00	95.00	4.75	4.51	4.15
July	95.00	105.00	95.00	4.80	5.03	4.50
Aug.	84.00	94.00	92.00	4.92	5.00	4.50
Sep.	70.00	80.00	90.00	4.94	4.75	4.50

† Premium for open-hearth.

Price Changes of Iron and Steel Products From March 15, 1916 to Date.

Price changes in merchant bars, structural shapes, plates, wire nails, merchant pipe, sheets and tin plates are given below, with dates. These are the commodities used in compiling our **composite finished steel**. In some cases the dates named are those upon which prominent producers announced price changes, but more frequently the rates are merely those upon which our quotations were changed. A few other price changes are included.

1916—			Oct. 26	Galv. sheets	4.50	to 4.75
Mar. 15	Steel pipe	74¢ to 73¢	" 27	Blue ann. sheets	3.15	to 3.30
" 15	Boiler tubes	63% to 61%	" 30	Tin plate	5.75	to 6.00
" 23	Bars	2.35 to 2.50	" 31	Shapes	2.70	to 2.80
" 23	Shapes	2.35 to 2.50	Nov. 1	Boiler tubes	54% to 52%	
" 28	Plates	2.60 to 2.75	" 6	Wire nails	2.70	to 2.85
" 29	Sheets	2.75 to 2.85	" 8	Sheets	3.40	to 3.65
" 29	Steel pipe	73% to 72%	" 15	Tin plate	6.00	to 6.25
" 29	Boiler tubes	61% to 60%	" 15	Grooved skelp	2.50	to 2.60
April 5	Sheets	2.85 to 2.90	" 15	Pipe	69% to 68%	
" 15	Boiler tubes	60% to 56%	" 18	Galv. sheets	5.00	to 5.50
" 19	Tin plate	4.50 to 5.00	" 20	Tin plate	6.25	to 7.00
" 24	Pipe	72% to 70%	" 20	Sheets	3.65	to 4.00
May 1	Wire nails	2.40 to 2.50	" 21	Bars	2.70	to 2.90
" 3	Tin plates	5.00 to 5.50	" 21	Plates	3.25	to 3.50
" 16	Plates	2.75 to 2.90	" 21	Shapes	2.80	to 3.00
June 7	Galv. sheets	5.00 to 4.75	" 21	Blue ann. sheets	3.30	to 3.40
" 16	Tin plate	5.50 to 6.00	" 21	Boiler tubes	52% to 46%	
July 7	Blue ann. sheets	3.00 to 2.90	" 25	Grooved skelp	2.60	to 2.85
" 7	Galv. sheets	4.75 to 4.50	" 27	Blue ann. sheets	3.40	to 3.50
Aug. 1	Tin plate	6.00 to 5.50	" 27	Galv. sheets	5.50	to 5.75
" 7	Wire nails	2.50 to 2.60	" 27	Wire nails	2.85	to 3.00
" 15	Bars	2.50 to 2.60	Dec. 4	Pipe	68% to 66%	
" 18	Shapes	2.50 to 2.60	" 4	Sheets	4.00	to 4.25
" 18	Plates	2.90 to 3.00	Dec. 5	Galv. sheets	5.75	to 6.00
" 25	Galv. sheets	4.25 to 4.15	" 5	Blue ann. sheets	3.50	to 3.65
Sept. 7	Pipe	70% to 69%	" 11	Sheets	4.25	to 4.50
" 7	Boiler tubes	56% to 54%	" 11	Galv. sheets	6.90	to 6.25
" 20	Galv. sheets	4.15 to 4.25	" 20	Tin plate	7.00	to 7.50
" 28	Sheets	2.90 to 3.00	" 21	Bars	2.90	to 3.00
Oct. 3	Blue ann. sheets	2.90 to 3.00	" 21	Shapes	3.00	to 3.10
" 5	Galv. sheets	4.25 to 4.30	" 21	Plates	3.50	to 3.60
" 6	Sheets	3.00 to 3.10	" 26	Blue ann. sheets	3.75	to 4.00
" 7	Tin plate	5.50 to 6.00	" 30	Pipe	66% to 64%	
" 13	Sheets	3.10 to 3.25	1917—			
" 13	Galv. sheets	4.30 to 4.40	Jan. 10	Galv. sheets	6.25	to 6.50
" 13	Tin plate	6.00 to 5.75	" 10	Blue ann. sheets	4.00	to 4.25
" 16	Galv. sheets	4.40 to 4.50	" 16	Tin plate	7.00	to 7.50
" 19	Wire nails	2.60 to 2.70	" 30	Shapes	3.10	to 3.25
" 20	Sheets	3.25 to 3.35	" 30	Plates	3.60	to 3.75
" 20	Blue ann. sheets	3.00 to 3.15	Feb. 6	Tin plate	7.00	to 8.00
" 24	Plates	3.00 to 3.25	" 14	Pipe	64% to 62%	
" 25	Bars	2.60 to 2.70	" 15	Sheets	4.50	to 4.75
" 25	Shapes	2.60 to 2.70	" 16	Blue ann. sheets	4.25	to 4.50
" 25	Grooved skelp	2.35 to 2.50	Mar. 5	Pipe	62% to 60%	
" 26	Sheets	3.35 to 3.40	" 5	Wire nails	3.00	to 3.20

Mar. 8	Bars	3.00	to 3.25
" 8	Plates	3.75	to 4.50
" 8	Shapes	3.25	to 3.60
" 14	Sheets	4.75	to 5.00
" 14	Galv. sheets	6.50	to 6.75
" 20	Blue ann. sheets	4.50	to 4.75
" 20	Galv. sheets	6.75	to 7.00
Apr. 2	Tin plate	8.00	to 7.50
" 2	Pipe	60% to	55%
" 3	Sheets	5.00	to 5.50
" 3	Blue ann. sheets	4.75	to 5.00
" 3	Galv. sheets	6.75	to 7.00
" 18	Sheets	5.50	to 6.00
" 18	Blue ann. sheets	5.00	to 5.50
" 18	Galv. sheets	7.00	to 7.50
" 20	Sheets	6.00	to 6.50
" 20	Blue ann. sheets	5.50	to 6.00
" 20	Galv. sheets	7.50	to 8.00
" 23	Wire nails	3.20	to 3.50
" 24	Bars	3.35	to 3.50
" 24	Shapes	3.60	to 4.00
" 25	Tin plate	7.50	to 8.00
May 1	Galv. sheets	8.00	to 9.00
" 11	Pipe	55% to	49%
" 14	Bars	3.50	to 3.75
" 14	Plates	4.50	to 5.50
" 17	Sheets	6.50	to 7.00
" 17	Blue ann. sheets	6.00	to 6.50
" 18	Galv. sheets	8.00	to 8.50
" 18	Blue ann. sheets	6.50	to 7.00
" 18	Galv. sheets	8.50	to 9.25
June 7	Plates	5.50	to 7.00
" 8	Shapes	4.00	to 4.25
" 8	Galv. sheets	9.25	to 9.50
" 13	Sheets	7.00	to 7.50
" 13	Blue ann. sheets	7.00	to 7.50
" 15	Bars	3.75	to 4.00
" 18	Plates	7.00	to 8.00
" 19	Wire nails	3.50	to 4.00
" 20	Sheets	7.50	to 8.00
" 25	Bars	4.00	to 4.50
" 25	Shapes	4.25	to 4.50
" 25	Galv. sheets	9.50	to 10.00
" 28	Plates	8.00	to 9.00
" 29	Blue ann. sheets	7.50	to 8.00
July 2	Pipe	49% to	42%
Aug. 8	Pipe	42% to	49%
" 31	Plates	9.00	to 8.00
Sept. 7	Bars	4.50	to 4.00
" 17	Galv. sheets	10.00	to 9.50
" 17	Shapes	4.50	to 4.00
" 25	Bars	4.00	to 2.90*
" 25	Shapes	4.00	to 3.00*
" 25	Plates	8.00	to 3.25*

* Government price announced preceding afternoon.

Steel Making Pig Iron Averages.

Bessemer and basic pig iron averages compiled by Messrs. W. P. Snyder & Company from sales in the valley market of 1,000 tons and over.

	Bessemer.		Basic.	
	1916.	1917.	1916.	1917.
Jan. ...	\$20.645	\$35.00	\$17.833	\$30.00
Feb. ..	20.2136	35.418	17.984	30.00
Mar. ..	20.8625	36.423	18.25	32.537
April ..	20.70	41.332	18.00	37.996
May ..	20.833	45.9917	18.1607	41.8947
June ..	21.00	53.266	18.00	49.149
July ...	21.00	56.50	18.00	52.848
Aug. ..	21.00	53.221	18.00	49.422
Sept. ..	21.9346	45.4506	18.63	41.341
Oct. ..	22.6576		20.3086	
Nov. ..	29.12		27.229	
Dec. ..	34.213		30.00	
Year ..	22.9316		20.0329	

Above prices are f. o. b. valley furnace; delivered Pittsburgh is 95 cents higher.

British Iron And Steel Exports.

	Pig Iron.	Rails.	Tin Plate.	Totals.*
1912 ..	1,262,383	407,175	481,123	4,933,112
1913 ..	1,124,181	500,117	494,497	5,049,090
1914 ..	780,763	433,507	435,392	3,972,348
1915 ..	611,227	242,267	368,778	3,248,046
1916 ..	917,396	50,275	321,710	3,357,829
1916—				
June ..	77,487	3,243	30,351	310,625
July ...	69,999	3,485	38,174	298,929
Aug. ..	95,655	1,983	34,124	319,928
Sept. ..	72,683	2,712	19,226	231,335
Oct. ...	72,187	6,929	10,929	241,261
Nov. ..	49,986	16,411	4,571	224,554
Dec. ..	48,542	2,317	14,248	158,609
1917—				
Jan. ..	61,201	5,935	16,515	210,124
Feb. ..	59,970	851	11,069	186,308
Mar. ..	79,694	6,084	38,057	239,965
April ..	57,738	2,659	16,863	180,869
May ..	68,201	1,680	18,290	199,418
June ..	86,793	2,453	18,975	220,304
July ..	74,091	4,734	18,941	268,190
7 mos...	487,688	24,403	116,534	1,505,180

* Includes scrap, pig iron, rolled iron and steel, cast and wrought iron manufactures, bolts, nuts, etc., but not finished machinery, boilers, tools, etc.

Iron and Steel Imports and Exports.

Value of Tonnage and Non-Tonnage.

	1912.	1913.	1914.	1915.	1916.	1917.
January	\$18,451,914	\$25,141,409	\$16,706,836	\$18,053,421	\$51,643,807	\$108,423,640
February	21,801,570	24,089,871	16,520,260	16,470,751	54,145,496	85,117,010
March	24,474,799	27,221,210	20,551,137	20,985,505	58,266,144	111,164,876
April	26,789,853	27,123,044	20,639,569	25,302,649	58,655,447	102,560,345
May	28,050,247	26,718,970	19,734,045	26,536,612	72,926,180	107,362,635
June	24,795,802	25,228,346	18,927,958	31,730,132	76,237,844	119,141,826
July	24,917,952	24,170,704	16,737,552	35,892,106	70,745,162	
August	25,450,107	23,947,440	10,428,817	37,726,657	86,296,703	
September ...	23,286,040	22,831,082	12,531,102	38,522,175	90,895,592	
October	25,271,559	25,193,887	16,455,832	43,299,457	82,010,972	
November	26,406,425	20,142,141	15,689,401	48,056,220	77,570,840	
December	23,750,864	22,115,701	14,939,613	45,825,147	88,536,958	

Totals \$289,128,420 \$293,934,160 \$199,861,684 \$388,400,832 \$867,323,044 \$633,670,342

Exports of Tonnage Lines,---Gross Tons.

	1910.	1911.	1912.	1913.	1914.	1915.	1916.	1917.
January	118,681	152,362	151,575	249,493	118,770	140,550	357,122	608,286
February	110,224	150,919	204,969	241,888	121,206	139,946	368,981	449,107
March	124,980	216,360	218,219	257,519	159,998	174,104	438,656	606,563
April	117,921	228,149	267,313	259,689	161,952	223,587	384,796	521,179
May	135,306	178,589	307,656	242,353	139,107	263,113	538,651	588,515
June	120,601	174,247	273,188	243,108	144,539	356,431	528,022	631,606
July	127,578	162,855	272,778	237,159	114,790	380,336	503,685	
August	131,391	177,902	282,645	209,856	86,599	405,952	597,750	
September	119,155	181,150	248,613	213,057	96,476	382,118	643,767	
October	129,828	186,457	251,411	220,550	147,293	349,848	610,125	
November	155,138	187,554	233,342	175,961	140,731	362,766	554,859	
December	150,102	190,854	235,959	181,715	117,827	353,856	580,961	

Totals 1,540,895 2,187,724 2,947,596 2,745,535 1,549,554 3,532,606 6,110,790 3,405,256

Iron Ore Imports.

	1914.	1915.	1916.	1917.
Jan. .	101,804	75,286	89,844	97,440
Feb. .	112,574	78,773	94,315	86,314
Mar. .	68,549	88,402	93,383	95,989
April .	111,812	91,561	73,712	58,878
May .	125,659	98,974	148,599	66,762
June .	188,647	118,575	134,154	54,846
July .	141,838	119,468	156,755	
Aug. .	134,913	126,806	127,094	
Sept. .	109,176	173,253	109,747	
Oct. .	114,341	138,318	95,833	
Nov. .	90,222	113,544	82,257	
Dec. .	51,053	118,321	118,043	

Totals 1,350,588 1,341,281 1,325,736 460,229

Iron and Steel Imports.

	1913.	1914.	1915.	1916.	1917.
Jan. .	21,740	17,776	10,568	15,824	39,991
Feb. .	25,505	14,757	7,506	20,279	24,380
Mar. .	27,467	27,829	8,025	15,159	37,280
April .	25,742	30,585	16,565	20,175	48,055
May .	28,728	28,173	28,916	32,113	26,037
June .	36,597	23,076	32,200	26,885	28,413
July .	36,694	25,282	20,858	14,774	
Aug. .	18,740	28,768	27,557	32,257	
Sept. .	19,941	38,420	23,344	25,558	
Oct. .	20,840	22,754	34,319	30,170	
Nov. .	25,809	24,165	36,931	42,544	
Dec. .	26,454	9,493	35,409	44,133	

Total 317,260 289,778 282,443 275,743 204,156

Immigration Statistics.

Years mentioned refer to fiscal years ended June 30th. Aliens admitted include immigrant and non-immigrant, aliens departed include emigrant and non-emigrant.

Excess Arrivals Over Departures.

	Aliens.	Citizens.	Total.
1913	815,303	*61,098	754,205
1914	769,276	*82,211	687,065
1915	50,070	67,167	117,237
1916	125,941	11,197	137,138
1917	216,498	1,409	217,907

July, 1915 ...	11,082	3,912	14,994
August	*14,324	*804	*15,128
September ...	1,965	866	*1,099
October	4,877	662	5,539
November ...	3,292	*802	2,490
December ...	*570	*891	*1,461
January, 1916	7,303	*1,212	6,091
February	19,420	*1,826	17,594
March	23,791	4,198	27,989
April	26,143	4,471	30,614
May	24,708	2,021	26,729
June	22,184	65	22,249

July	18,244	3,634	21,878
August	21,413	304	21,717
September ...	29,310	1,443	30,753
October	28,339	*2,012	26,327
November ...	24,241	*183	24,058
December ...	18,791	*252	18,539
January, 1917	19,563	*1,790	17,773
February	14,145	*1,612	13,103
March	14,125	2,591	16,716
April	18,821	4,709	23,530
May	5,313	*7,525	*2,212
June	3,593	2,132	5,725

June 1917.

Immigrant aliens in	11,095
Non-immigrants in	5,049
Total aliens in	16,144

Emigrant aliens out	7,462
Non-emigrant aliens out	5,089
Total aliens out	12,551

Citizens in	11,793
Citizens out	9,661
Excess citizens in	2,132

Change in population:

Aliens	+3,593
Citizens	+2,132
Net change	+5,725

* Excess of departures.

Our Foreign Trade.

Value of merchandise imports and exports and favorable trade balance, calendar years.

	Imports.	Exports.	Balance.
1906	1,320,501,572	1,798,243,434	477,741,862
1907	1,423,169,820	1,923,426,205	500,256,385
1908	1,116,374,087	1,752,835,447	636,461,360
1909	1,475,520,724	1,728,198,645	252,677,921
1910	1,562,504,151	1,866,258,904	303,354,753
1911	1,532,359,160	2,092,526,746	560,167,586
1912	1,818,133,355	2,399,217,993	581,084,638
1913	1,792,596,480	2,848,018,292	691,421,812
1914	1,789,276,001	2,113,624,050	324,348,049
1915	1,778,596,695	3,554,670,847	1,776,074,152
1916	*2,391,654,335	*5,481,423,589	*3,089,769,254

1914—

Aug.	129,767,890	110,367,494	†19,400,396
Sept.	139,710,611	156,052,333	16,341,722
Oct.	137,978,778	195,283,852	57,305,074
Nov.	126,467,062	205,878,333	79,411,271
Dec.	114,656,545	245,632,558	130,976,013

1915—

Jan.	122,148,317	267,879,313	145,730,996
Feb.	125,123,391	298,727,757	173,604,366
Mar.	158,022,016	296,501,852	138,479,836
Apr.	160,576,106	294,745,913	134,169,807
May	142,284,851	273,769,093	131,484,242
June	157,695,140	268,547,416	110,852,276
July	143,099,620	267,978,990	124,879,370
Aug.	141,830,202	261,025,230	119,195,028
Sept.	151,236,026	300,676,822	149,440,796
Oct.	149,172,729	336,452,009	186,979,289
Nov.	155,496,675	327,670,353	172,173,678
Dec.	171,832,505	359,306,492	187,473,987

1916—

Jan.	184,350,942	330,036,410	145,685,468
Feb.	193,935,117	402,991,118	209,056,001
Mar.	213,589,785	410,742,034	197,152,249
Apr.	218,236,397	398,568,532	180,332,135
May	229,188,957	474,803,637	245,614,680
June	245,795,438	464,784,318	218,988,880
July	182,722,938	445,472,000	262,749,062
Aug.	199,247,391	509,778,680	310,531,289
Sept.	164,038,614	515,007,408	650,968,794
Oct.	178,658,730	492,813,918	314,155,188
Nov.	176,988,305	516,976,359	339,988,054
Dec.	204,834,188	521,650,904	316,816,716

1917—

Jan.	241,707,282	*613,555,693	*371,848,411
Feb.	199,479,996	467,683,406	268,203,410
Mar.	270,218,139	553,988,239	283,770,100
Apr.	253,916,966	530,252,295	276,335,329
May	280,706,164	552,795,022	272,088,858
June	*306,622,939	575,210,049	268,587,110
July	226,000,000	374,000,000	148,000,000

* High record. † Balance unfavorable.

U. S. Steel Corporation's Operations.

Earnings and Unfilled Orders.

Earnings by Quarters.

Net earnings by quarters since 1911:

Quarter.	1917.	1916.	1915.
1st	\$113,121,018	\$60,713,624	\$12,457,809
2nd	790,579,204	81,126,048	27,950,055
3rd		85,817,067	38,710,644
4th		105,968,347	51,277,504
Year ...		333,625,086	130,396,012

* Excess profits expected to be deducted, \$33,865,000.

† After deducting expected excess profits tax, \$53,918,872.

	1914.	1913.	1912.
1st	\$17,994,382	\$34,426,802	\$17,826,973
2nd	20,457,596	41,219,813	25,102,266
3rd	22,276,002	38,450,400	30,063,512
4th	10,935,635	23,084,330	35,181,922
Year	71,663,615	137,181,345	108,174,673

Unfilled Orders.

1904 ..	4,136,961	3,192,277	3,027,436	4,696,203
1905 ..	5,579,560	4,829,655	5,865,377	7,605,086

(At end of the Quarter.)

	First.	Second.	Third.	Fourth.
1906 ..	7,018,712	6,809,584	7,936,884	4,489,718
1907 ..	8,043,858	7,603,878	6,425,008	4,642,553
1908 ..	3,765,343	3,313,876	3,421,977	3,603,527
1909 ..	3,542,590	4,057,939	4,796,833	5,927,031
1910 ..	5,402,514	4,237,794	3,158,106	2,674,757
1911 ..	3,447,301	3,361,058	3,611,317	5,084,761
1912 ..	5,304,841	5,807,346	6,551,507	7,932,164
1913 ..	7,468,956	5,807,317	5,003,785	4,282,108
1914 ..	4,653,825	4,032,857	3,787,667	3,836,643
1915 ..	4,255,749	4,678,196	5,317,608	7,805,220
1916 ..	9,331,001	9,640,458	9,522,584	11,547,286
1917 ..	11,711,644	11,383,287		

Bookings and Shipments.

In this table, first two columns, percentages of bookings and shipments to total capacity, our own estimates, while last column is derived from official reports of "unfilled tonnage" while third percentage column is directly computed from this tonnage column.

	Ship-ments.	Book-ings.	Dif-ference.	Dif-ference.
1915—	%	%	%	Tons.
June	79	113	+34	+413,598
July	83	104	+21	+250,344
August	91	89	— 2	— 20,085
September ..	98	133	+35	+409,163
October ...	103	172	+69	+847,834
November .	102	186	+84	+1,024,037
December .	102	152	+50	+615,731

1916—				
January ...	102	112	+10	+116,547
February ..	102	157	+55	+646,199
March	104	164	+60	+762,035
April	104	146	+42	+498,550
May	104	113	+ 9	+108,247
June	104	82	—22	—297,340
July	90	86	— 4	— 46,866
September .	96	87	— 9	—137,773
October ...	106	145	+39	+492,676
November .	104	189	+85	+1,043,282
December .	96	136	+40	+488,744

1917—				
January ...	92	86	— 9	— 73,232
February ..	92	101	+ 9	+102,643
March	97	107	+10	+134,947
April	99	137	+38	+471,439
May	98	75	—23	—296,492
June	98	59	—39	—503,304
July	92	49	—43	—530,123
August	90	58	—32	— 437,115

Total unfilled obligations, August 31, 1917 10,407,049 tons.

Lake Superior Iron Ore.

Shipments of iron ore down the lakes have been as follows, in gross tons:

	1913.	1914.	1915.	1916.	1917.
April	866,386	269,686	503,832	1,658,411	211,532
May	7,284,212	3,852,063	5,012,359	8,449,580	6,283,612
June	7,974,444	5,502,367	6,005,091	9,507,576	9,639,991
July	8,204,416	5,784,514	7,204,021	9,750,157	10,241,633
August	7,677,601	5,869,477	8,081,117	9,850,140	10,146,786
September	7,258,413	5,431,307	7,863,146	9,600,786	9,536,549
October	6,526,103	4,242,392	7,146,873	9,116,196	
November ...	3,270,958	1,070,092	4,445,129	5,715,452	
December	18,545	.....	57,236	1,085,900	
Season Lake ..	49,070,478	32,021,897	46,318,804	64,734,198	46,060,103

Tin Plate Movement.

United States imports and exports of tin plate in gross tons have been as follows, the imports of course including those for drawback purposes:

Imports. Exports.

1906	56,983	12,082
1907	57,773	10,293
1908	58,490	11,878
1909	62,592	9,327
1910	66,640	12,459
1911	14,098	61,466
1912	2,053	81,694
1913	20,680	57,812
1914	15,411	59,549
1915	2,350	151,642
1916	1,008	227,391
January, 1916	62	12,178
February	107	13,534
March	44	20,363
April	179	21,385
May	39	25,585
June	91	29,751
July	150	18,760
August	105	18,757
September	51	18,770
October	111	14,195
November	38	15,816
December	34	18,229
January, 1917	31	23,408
February	35	14,632
March	21	21,680
April	34	19,936
May	2	23,283
June	2	25,461

The Automatic Signal & Sign Company, 409 Rex Avenue, Canton, Ohio, has been incorporated with a capital stock of \$10,000 to manufacture signals. P. G. Myers is president and John A. Wertz, secretary-treasurer.

The Continental Automatic Sprinkler Company, Richmond, has been incorporated with a capital of \$300,000 to manufacture automatic sprinklers. J. Adam and Wm. E. Word are the principal incorporators.

Taylor's Motor Corporation, New York, has been incorporated with a capital of \$100,000 to manufacture automobiles and motor vehicles. E. H. Rodgers and H. R. Worthington, 37 Wall Street, are the incorporators.

Car and Locomotive Buying.

Freight Cars Ordered.

1915: Domestic	105,000	
Export	20,000	
1916: Domestic	165,000	
Export	29,000	
1917: Domestic	42,556	
Export	30,002	
U. S. Ry. in France	12,997	
January	16,840	
February	19,566	
March	9,687	
April	1,772	
May	12,298	
June	6,055	
Six months		66,218
July	5,670	
August	13,262	
September	605	

Locomotives Ordered.

1915: Domestic	1,500	
Export	800	
1916: Domestic	2,850	
Export	2,900	
1917: Domestic	1,987	
Export	1,600	
U. S. Ry. in France	1,164	
January	807	
February	299	
March	232	
April	339	
May	1,276	
June	575	
Six months		3,528
July	448	
August	775	
September	65	

STRUCTURAL STEEL LETTINGS

Reports of the Bridge Builders' and Structural Society, lettings of structural steel contracts by months in percentage of the fabricating capacity, capacity being now about 180,000 tons a month.

	1914.	1915.	1916.	1917.
January	62	25	69	61½
February	63	30	75	59
March	76	64	102	68
April	88	62½	72½	61
May	57	61	80	56½
June	56½	80	58	47½
July	68	86	47½	41½
August	27½	85	64	38
September	38½	67	52½	
October	35	78	77	
November	20	105	78	
December	35	121	86	
Average	52¼	72	71¾	

Copper in September.

Copper Price Fixed at 23.50c Per Pound, Subject to Revision in Four Months; to Apply Alike to Our Government, Our Allies and to the Public—Market Completely Paralyzed Owing to Uncertainty as to How Business Can Be Done—Labor Troubles Cut Further Into Production—Exports Show Increase.

The long expected price-fixing of copper—at 23.50c per pound—not only for the United States but for our Allies and for the public as well, by the Government, and which was determined through agreement with the leading producers of the country, was the all-important feature in the copper industry during September. Pending the official announcement which was made on the 21st, business was almost paralyzed, prices being more or less nominal. Prompt and September positions were held at 27.00 to 28.00c for Lake; 26.00 to 27.00c for Electrolytic; 25.50 to 26.50c for Casting copper with future positions ranging fractionally lower. The few transactions consummated were almost wholly confined to the filling of mandatory requirements. Prime Lake and Casting grades were both scarce.

Labor troubles at mines and smelters continued to harass operations and to curtail production. All Anaconda operations in Montana were suspended until after the middle of the month when better conditions were developed, resulting in a partial resumption of operations which it was expected would proceed until full capacity was again employed. The strike in the California mines was also reported settled about the same time.

Total exports of copper—which are now under United States Government control—were 42,285 tons during August, not including those to Canada. This is 16,429 tons greater than the July outgo. It is estimated that the needs of the Allied Governments during the remainder of 1917 will average something over 35,000 tons per month. The total ship tonnage available for carrying commodities of all kinds in any one month determines the amount of copper that can be shipped abroad because such tonnage must be apportioned according to the various and most urgent

needs of the Allies among the different commodities wanted. Toward the close of the month—on the 24th, to be specific—the London market declined £10 to £110 for spot and future Standard and £7 to £130 for spot and to £126 for future Electrolytic respectively.

Government Requirements Will Greatly Increase.

United States Government requirements which have been relatively small—about 13,300 tons per month on the average—are expected to be greatly increased as the war program is developed; 22,300 tons per month, it is estimated, will be needed over the remainder of this year. This estimated average monthly production of refined copper is more than 75,000 tons, including 22,320 tons from imported material, so there will be left for commercial uses, after deducting the United States and Allied government requirements, during the next three months, about 60,000 tons of refined copper, or at the rate of 20,000 tons per month.

All War Copper to Have Priority Over Other Work.

It has been pointed out, however, that all copper contracts for war purposes, either for the United States or for the needs of our Allies must have priority over merely commercial contracts for other than war uses of copper. The War Industries Board has also declared that all contracts for copper that were placed before the price-fixing, shall remain inviolate and fulfilled in time which is subject only to the war requirements. To promote the equitable adjustment of all orders, distribution, and settlement in regard to precedence, will make it advisable to refer all contracts to Washington authorities.

Trade All at Sea.

Under these conditions it is not surprising that consumers who hoped to

Lake Copper Prices.

Monthly average prices of Lake Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.89	14.76	13.89	24.10	29.83
Feb.	15.37½	14.98	14.72½	27.44	34.04½
Mar.	14.96	14.72	15.11	27.43	35.33
Apr.	15.55	14.68	17.43	28.91½	32.46
May	15.73	14.44	18.81	29.28½	31.90
June	15.08	14.15	19.92	27.44	31.35
July	14.77	13.73	19.42	25.81	29.79
Aug.	15.79	12.68	17.47	26.58	28.75
Sept.	16.72	12.43½	17.76	27.86	*27.43
Oct.	16.81	11.66	17.92½	28.37½	
Nov.	15.90	11.93	18.86	31.71	
Dec.	14.82	13.16	20.37½	33.07½	
Av.	15.70	13.61	17.64	28.17	

Electrolytic Copper Prices.

Monthly average prices of Electrolytic Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.75½	14.45	13.71	24.10	30.26
Feb.	15.27	14.67	14.57	27.46	35.22
Mar.	14.92½	14.33½	14.96	27.44	35.74
Apr.	15.48	14.34	17.09	29.31	32.19
May	15.63	14.13	18.60	29.81	32.32
June	14.85	13.81	19.71	27.49½	32.57
July	14.57	13.49	19.08	25.60	28.90
Aug.	15.68	12.41½	17.22	27.36½	27.13
Sept.	16.55	12.08½	17.70½	28.26	*26.35½
Oct.	16.54	11.40	17.86	28.64	
Nov.	15.47	11.74	18.83	32.22½	
Dec.	14.47	12.93	20.35	33.84	
Av.	15.52	13.31½	17.47	28.46	

Casting Copper Prices.

Monthly average prices of Casting Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.57	14.27½	13.52	23.06½	28.04½
Feb.	15.14	14.48	14.17	26.03	31.73½
Mar.	14.76	14.18	14.34	25.90	32.18
Apr.	15.39	14.18	16.48	27.16	29.24
May	15.45½	14.00	17.41	27.37	30.11
June	14.72	13.65	18.74½	25.10	30.36
July	14.40½	13.34½	17.76½	23.61	27.59
Aug.	15.50	12.27	16.46	24.67	26.58
Sept.	16.37½	12.00	16.75	25.93	*26.23
Oct.	16.33	11.29	17.32	27.17	
Nov.	15.19	11.63	18.41	30.37½	
Dec.	14.22	12.83½	19.73	31.74	
Av.	15.33	13.18	16.76	26.51	

* Average of quotations to Sept. 20th inclusive; no market thereafter.

Sheet Copper Price Changes.

The changes in the base price of sheet copper since April 26, 1916 are given below, with price of Lake Copper on same date.

1916—	Sheet Copper.	Lake Copper.
April 26	36.50	29.75
May 9	37.50	30.00
August 1	35.50	25.50
August 19	36.00	27.00
September 27	37.00	28.25
November 14	40.00	31.75
November 20	41.00	33.75
December 5	42.00	34.00
1917—		
February 19	44.00	35.25
April 10	42.00	33.75
April 23	40.00	30.75
June 11	38.00	31.50
June 19	39.00	31.50
June 20	38.00	28.50
July 26	36.00	29.00

Waterbury Copper Averages.

	1913.	1914.	1915.	1916.	1917.
Jan.	17.00	14.75	14.12½	24.75	32.25
Feb.	15.50	15.12½	15.25	27.75	35.25
Mar.	15.12½	15.00	15.75	28.00	35.50
Apr.	15.75	14.87½	18.50	29.00	32.75
May	15.87½	14.75	22.50	29.87½	32.00
June	15.37½	14.37½	22.50	28.25	32.50
July	14.75	14.12½	22.25	27.25	30.87½
Aug.	15.62½	13.00	19.50	27.00	29.00
Sept.	16.87½	12.87½	18.50	28.00	27.25
Oct.	16.87½	12.25	18.25	28.87½	
Nov.	16.25	12.25	19.37½	33.25	
Dec.	15.00	13.50	20.75	34.25	
Av.	15.83	13.91	18.94	28.85½	

Exports of Copper From the United States.

(In tons of 2,240 lbs.)

	1914.	1915.	1916.	1917.
January ..	36,018	26,193	23,663	*51,322
February ..	34,634	15,583	20,648	*32,265
March ...	46,504	30,148	26,321	*51,218
April	35,079	18,738	21,654	*49,536
May	32,077	28,889	16,062	*49,245
June	35,182	16,976	39,595	*41,177
July	34,145	17,708	35,066	25,856
August ...	16,509	17,551	32,190	42,285
September	19,402	14,877	29,803	
October ..	23,514	24,087	33,224	
November	24,999	23,168	22,598	
December.	22,166	42,426	26,486	
Totals ..	360,229	276,344	327,310	342,904

buy copper at 23.50c immediately after the price-fixing was announced, were sadly disappointed. So many questions developed in fact, questions in regard to the detailed application of the fixed price in relation to the various kinds of copper, whether Lake, Casting or Electrolytic, as well as in regard to the different positions, prompt, early and future, that business outside of Government orders was practically suspended after the announcement of the co-operative price was made. Some small transactions between dealers and consumers—dealers of course are not subject to the agreement entered into by producers—were reported in the last two days of the month, October Electrolytic selling for 26.00c cash, f.o.b. New York. Casting copper was so scarce that prices were held at the same figures as Electrolytic on the last day, 26.50c for prompt; 26.00c for November and 25.75c for December delivery.

At the beginning of September the market was at a standstill and several sales of Electrolytic were made at auction on the New York Metal Exchange of prompt and September delivery for 25.07½c; of October, for 25.02½c and of November, for 24.90c, all delivered New York for cash. With various rumors filling the air as to developments at Washington in regard to the price-fixing, the market became very sensitive and when on the 10th a sale of 75,000,000 pounds to the Allies at 25.00c per pound was reported, this was taken as an indication that the U. S. Government price determined upon would be no less. Later, it was learned that the sale referred to was the one consummated early in August—about 77,000,000 pounds. Prices, however, had advanced ⅛ to ¼c per pound on the report and inquiries from consumers were more numerous than for a long time but few if any sales were actually made. As time passed and no official announcement was made, uncertainty again restricted business and prices were reduced fractionally, prompt and September Electrolytic being offered on the 19th, at 26.37½c to 26.75c, October 26.25 to 26.50c, Novem-

ber 26.00 to 26.25c and December 25.75 to 26.12½c per pound.

When on the 21st, the official base price of 23.50c for Electrolytic copper, subject to revision in four months, was announced, the statement was so lacking in detail that some confusion of mind was noted in many instances. Three important conditions were imposed in the agreement, first, that producers should not reduce the wages now being paid to labor; second that the operators should sell copper to the Allied Governments and to the public at the fixed price, also that the War Industries Board should take necessary measures to prevent copper from falling into the hands of speculators and third, that the producers should make every effort to maintain the maximum rate of production of copper so long as the war lasts. Unsettled conditions followed the announcement but a somewhat better understanding of the Government regulations seemed to exist at the close of the month.

Copper Prices in September

Day.	— New York —			London.		
	Lake.	Electro.	Casting.	Standard.	£	s d
3	.....	.....	.....	120	0	0
4	27.50	25.62½	25.50	120	0	0
5	27.50	25.62½	25.50	120	0	0
6	27.50	25.87½	25.62½	120	0	0
7	27.50	26.25	26.12½	120	0	0
10	27.50	26.37½	26.37½	120	0	0
11	27.50	26.50	26.37½	120	0	0
12	27.37½	26.62½	26.50	120	0	0
13	27.37½	26.75	26.62½	120	0	0
14	27.37½	26.75	26.62½	120	0	0
17	27.37½	26.56¼	26.43¾	120	0	0
18	27.37½	26.56¼	26.43¾	120	0	0
19	27.37½	26.56¼	26.43¾	120	0	0
20	27.37½	26.56¼	26.43¾	120	0	0
21	No Market			120	0	0
24	"	"	"	110	0	0
25	"	"	"	110	0	0
26	"	"	"	110	0	0
27	"	"	"	110	0	0
28	"	"	"	110	0	0
High	28.00	27.00	26.75	120	0	0
Low	27.00	25.50	25.00	110	0	0
Aver.	27.43	26.55½	26.38	117	5	0

* Average of quotations to Sept. 20 inclusive

Tin in September.

**September a Quiet Month on the Whole; Prices Steady With Fluctuations Within a Narrow Range—Net Decline for Month $\frac{3}{8}$ c
Per Pound—Increasing Interest in Banca, Chinese and
Australian Tin—Statistics Unfavorable.**

While there was considerable activity at times in tin during September, the market on the whole, was quiet and steady with fluctuations within a range of 1.50c per pound, the highest price being 62.50c on the 14th and the lowest 60.75c on the 7th. The net recession was $\frac{3}{8}$ c per pound from 61.87 $\frac{1}{2}$ c at the August close to 61.50c at the end of September.

The foreign market declined from £243 10s for spot Standard, £242 10s for future Standard, £245 for spot Straits and £246 c.i.f. London Singapore equivalent at the beginning of the month, to the lowest point September 6th, £240 15s for spot Standard, £240 5s for future Standard, £242 5s for spot Straits and £242 c.i.f. London equivalent in the Far East, after which the highest point was reached on September 17th, £247 c.i.f. London equivalent at Singapore; and on the 24th for spot Straits £249; spot Standard £247 10s and future Standard £244 10s at London. At the close there was a recession of £2 on the various kinds except for tin c.i.f. London in the Far East, which was down £1 to £246.

Popularity of Grades Other Than Straits.

An interesting feature was the continued and increasing interest in Banca, Chinese No. 1 and Australian tin, many prominent buyers purchasing these varieties, who before the war bought only Straits tin. The retail trade too, is feeling the competition that has arisen from the American manufacture of tin from Bolivian ores. Comparative statistics of Bolivian ores reduced to fine tin in the United States during 1917 to September 1st, were 2,944 tons against 3,228 tons for the corresponding period of 1916 and 4,300 tons for the entire year of 1916. The falling off is attributed to the difficulties encountered in transportation because of inadequate railroad facilities and the with-

drawal of many steamers from south American waters due to the necessities of the war.

Unfavorable Statistics.

Monthly tin statistics for August were unfavorable, showing an increase in the visible supply of 2,809 tons while deliveries into consumption were small being only 3,305 tons. In September, however, total deliveries into American consumption were 5,402 tons of which 2,100 tons were from Atlantic ports and 3,302 tons shipped from Pacific ports to the East. It is believed that a large part of deliveries from the Pacific coast are of Banca and Chinese tin. Total deliveries since January 1, 1917 have been 45,951 tons. Stocks in warehouses and landing at the end of September were 2,397 tons.

A Quiet Opening.

The month opened on a quiet, steady market with inquiries mostly for spot which was held at 61.25c f.o.b. for both wholesale and city deliveries. The London market was down £2 to £242 10s for spot Straits and £244 10s c.i.f. London from the Far East; spot Standard £242 and future Standard £241.

With the publication of tin statistics which were regarded as unfavorable on the 6th, prices receded to the lowest point of the month, 60.75c; delayed public cables about the same time combining to produce an adverse and depressing effect. Some irregularity in prices followed, a difference of 1c per pound being asked by different sellers for similar deliveries. Chinese spot tin was in ample supply at 54.75c but future deliveries were not offered and could be obtained only at very high prices because of the rapid advance in the price of silver affecting productive costs in China. Spot Banca was held at 58.50c with business in futures confined to resale lots at about 56.50c for far-off delivery. By the 10th, spot Straits tin was scarce, and prices ad-

vanced sharply to 61.25c while delivery early in 1918 was held at 56.50c per pound. An active demand for 99% tin was met at this time with only limited quantities for sale at 55.00c.

Market Firmer—Fair Volume of Business.

With fresh arrivals of 175 tons of Straits tin the scarcity of that kind was relieved but prices were higher, in sympathy with the advance abroad, and a fair volume of business was transacted, consumers and dealers both being in the market. Inquiries for future deliveries were better also than in several months. Spot Banca was up to 60c, August shipment being held at 58.50c and Chinese No. 1 had become scarce at 55.50c per pound. The sinking of the Minnehaha, although it was not positively known that she had tin aboard, and delayed cables, were important factors in influencing the advance to the highest point, 62.50c by the close of the first fortnight.

On the 17th, the London market was £246 for spot Standard, £244 for future Standard, £246 15s for spot Straits and £247 c.i.f. London from Singapore. Later, with further arrivals of Straits tin and a sharp decline in the Far East, prices receded sharply to 61.37½c by the 20th, notwithstanding there was a very fair demand here with sales in considerable volume. Immediately following, the foreign market advanced to the highest point of the month, £249 for spot Straits, £247 for spot Standard and £244 15s for future Standard. Prices here were up again to 62.25c per pound. The advance about this time in Atlantic war risk insurance was attributed to expected submarine activity on the Ameri-

can coast within the next few weeks and the rumors of an embargo on October shipments of tin from Singapore, which however, were not confirmed, was regarded as being a measure enacted to prevent the loss of tin through such under-sea activity.

In the next few days, with ample supplies and free offerings—except Chinese No. 1 which was scarce at 56.25c—prices again receded to 61.75c and on the last day were down to 61.50c, while Banca was held at 59.75c per pound.

Tin Prices in September.

Day.	New York.	London.		
	Cents.	£	s	d
3	61.25	243	10	0
4	61.25	242	0	0
5	60.87½	241	0	0
6	60.87½	240	15	0
7	60.75	241	0	0
10	61.50	241	0	0
11	61.50	242	0	0
12	62.00	243	10	0
13	62.37½	244	5	0
14	62.50	245	10	0
17	62.50	246	5	0
18	62.12½	245	0	0
19	61.62½	243	10	0
20	61.37½	243	0	0
21	61.50	244	10	0
24	62.25	247	10	0
25	62.12½	247	0	0
26	61.75	245	10	0
27	61.75	246	0	0
28	61.50	245	5	0
High	62.50	247	10	0
Low	60.75	240	15	0
Aver.	61.68	243	18	0

Visible Supplies.

Visible supplies of tin at end of each month:

	1913.	1914.	1915.	1916.	1917.
Jan.	13,971	16,244	13,901	17,041	18,169
Feb.	12,304	17,308	14,548	16,511	19,627
Mar.	11,132	16,989	15,467	18,782	20,307
April	9,822	15,447	15,785	19,739	18,047
May	13,710	17,862	14,646	19,614	19,404
June	11,101	16,027	15,927	19,363	18,059
July	12,063	14,167	16,084	18,404	17,544
Aug.	11,261	14,452	15,127	18,042	20,353
Sept.	12,943	14,613	15,191	16,192	19,153
Oct.	11,857	10,894	13,154	17,415	
Nov.	14,470	11,483	16,451	21,186	
Dec.	13,893	13,906	16,216	20,737	
Av'ge	12,377	14,907	15,208	18,585	

Shipments From the Straits.

Monthly shipments of tin from the Straits Settlements to Europe and United States:

	1913.	1914.	1915.	1916.	1917.
Jan.	6,050	5,290	5,200	6,095	4,815
Feb.	4,660	6,520	5,584	6,250	6,255
Mar.	4,810	4,120	4,970	5,170	5,134
April	4,400	4,930	5,270	4,685	4,393
May	6,160	6,900	6,759	3,965	6,866
June	4,280	5,870	6,665	6,210	4,723
July	4,770	4,975	5,606	5,410	4,410
Aug.	6,030	3,315	4,712	4,526	5,770
Sept.	5,160	4,973	5,296	3,270	*5,000
Oct.	5,020	4,610	4,441	5,868	
Nov.	5,560	5,155	6,713	5,380	
Dec.	5,110	6,435	5,301	4,758	
Total	62,550	63,093	66,517	61,587	
Av'ge.	5,213	5,258	5,543	5,132	

* Estimated.

Consumption In the U. S.

Monthly deliveries of tin in the United States exclusive of Pacific Coast:

	1913.	1914.	1915.	1916.*	1917.*
Jan.	3,700	3,600	2,300	4,432	7,177
Feb.	3,500	3,300	3,375	6,388	3,930
Mar.	5,900	4,450	3,200	4,726	4,800
April	3,450	4,300	3,200	4,202	4,380
May	3,350	3,800	5,600	5,455	5,749
June	3,800	3,650	3,900	6,398	6,398
July	3,900	3,900	5,500	4,432	4,806
Aug.	3,600	2,900	4,500	4,335	3,305
Sept.	3,100	3,600	4,300	4,025	5,402
Oct.	3,700	3,700	4,900	4,556	
Nov.	2,800	2,600	2,975	3,165	
Dec.	3,100	1,900	5,200	4,082	
Total	43,900	41,700	48,750	56,216	
Av'ge.	3,658	3,475	4,062	4,685	

Tin Statistics.

Compiled by New York Metal Exchange.

(Tons of 2,240 lbs.)

Shipment during	Sept. 1917.	Aug. 1917.	Sept. 1916.
Straits			
To Gt. Britain .	*2,000	3,195	1,910
" Continent ..	*1,000	550	760
" U. S.	*2,000	2,025	600
Total from Straits	*5,000	5,770	3,270
Australia			90
Consumption			
London deliveries	1,584	932	1,397
Holland deliveries	79	95	127
U. S.	5,402	3,305	4,025
Total	7,065	4,332	5,549

Stocks at close of month

In London—

Straits, Australian	2,294	3,804	3,012
Other kinds	947	964	1,018
In Holland			
In U. S.	2,397	2,092	4,769
Total	5,638	6,860	8,799

Afloat—

London	6,420	4,973	3,290
Banca & Billiton	1,920	2,420	1,263
U. S.	5,175	6,100	2,840

Total afloat

close of month	13,515	13,493	7,393
	Sept. 30	Aug. 31.	Sept. 30

Total visible supply	1917. 19,153	1917. 20,333	1916. 16,192
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* Estimated.

Straits Tin Prices In New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	50.45	37.74	34.30	41.88	44.19
Feb.	48.73	39.93	37.32	42.63	51.37
Mar.	46.88	38.08	49.93½	50.42	54.36
Apr.	49.12	36.10	47.98	51.75	55.91
May	49.14	33.30	38.78	49.15	63.29½
June	44.93	30.65	40.37	42.17	62.09
July	40.39	31.75	37.50	38.46	62.61
Aug.	41.72	50.59½	43.39	38.54	62.68½
Sept.	42.47	32.79	33.13	38.70½	61.68
Oct.	40.50	30.39½	33.08	41.16	
Nov.	39.81	33.50	39.37½	44.17	
Dec.	37.64	33.60	38.75	42.66½	
Year	44.32	35.70	38.66	43.48	

Spelter in September.

**Spelter Market in September Featured By Totally Unsatisfactory Conditions
—Western Smelters Operating at Less Than 50% of Capacity
Owing to High Production Costs—Net Advance for
Month About $\frac{3}{8}$ c—Ore Market Weak.**

The spelter industry in September was marked by unsatisfactory conditions that temporarily were discouraging to the trade although during the middle weeks of the month business was improved somewhat. Mines and smelters in the West were reported to be operating at less than half of total capacity because of the high cost of production and the low prices obtained for metal. Government orders to producers early in the month for grades A and B at 12.50c to 12c respectively, were almost immediately afterward, cancelled, and competitive bids asked for, the contract for grade B being awarded late in the month to the lowest bidder at 10.67 $\frac{1}{2}$ c per pound. There was also an inquiry for bids on 300 tons of grade C—prime Western—but this and grade A spelter were not yet passed upon when the month closed. There was an unverified report that the Sub-Committee on Zinc, of the Council of National Defense, had resigned. Galvanizers for the first time in many months entered the market but their requirements were quickly satisfied. Consumers bought only for mandatory requirements in small lots, the aggregate being only moderately large.

Exports for August were 8,589 tons. The foreign market continued to be pegged at £54.

Prices during the month advanced from 8.05 to 8.17 $\frac{1}{2}$ c New York and 7.87 $\frac{1}{2}$ to 8.12 $\frac{1}{2}$ c East St. Louis, to 8.42 $\frac{1}{2}$ c New York, and 8.25c East St. Louis—the highest price of the month—by Sept. 20th, after which there was no change until the 28th when a decline of $\frac{1}{8}$ c to 8.37 $\frac{1}{2}$ c New York and 8.20c East St. Louis was noted. Zinc ores throughout the month were weak at \$65 to \$75 per ton.

Government Requirements.

The same unsatisfactory conditions prevailing at the close of August continued through the early days of Sep-

tember with prices off $\frac{1}{8}$ c per pound. On the 5th, two sales aggregating 500 tons were made "under the rule" on the New York Metal Exchange, one at 7.50c in bond, the other at 7.80c in warehouse. Rumors were in the market of large inquiries from the Italian Government and a request for grades A and B for United States Government requirements—10,000,000 pounds of the former to be furnished at 12.50c and 2,750,000 pounds of the latter at 12c had been received by producers. A short time afterwards, B. M. Baruch cancelled this order, no explanation being given but it was understood to be due to friction in regard to prices, at Washington. The market by this time was showing considerable activity, galvanizers having entered with inquiries for September and October deliveries.

Spelter Prices in September.

Day	New York. Cents.	St. Louis. Cents.	London. £ s d
3	8.05	7.87 $\frac{1}{2}$	54 0 0
4	8.05	7.87 $\frac{1}{2}$	54 0 0
5	8.05	7.87 $\frac{1}{2}$	54 0 0
6	8.05	7.87 $\frac{1}{2}$	54 0 0
7	8.05	7.87 $\frac{1}{2}$	54 0 0
10	8.05	7.87 $\frac{1}{2}$	54 0 0
11	8.11 $\frac{1}{4}$	7.93 $\frac{3}{4}$	54 0 0
12	8.23 $\frac{3}{4}$	8.06 $\frac{1}{2}$	54 0 0
13	8.23 $\frac{3}{4}$	8.06 $\frac{1}{2}$	54 0 0
14	8.30	8.12 $\frac{1}{2}$	54 0 0
17	8.30	8.12 $\frac{1}{2}$	54 0 0
18	8.30	8.12 $\frac{1}{2}$	54 0 0
19	8.36 $\frac{3}{4}$	8.18 $\frac{3}{4}$	54 0 0
20	8.42 $\frac{1}{2}$	8.25	54 0 0
21	8.42 $\frac{1}{2}$	8.25	54 0 0
24	8.42 $\frac{1}{2}$	8.25	54 0 0
25	8.42 $\frac{1}{2}$	8.25	54 0 0
26	8.42 $\frac{1}{2}$	8.25	54 0 0
27	8.42 $\frac{1}{2}$	8.25	54 0 0
28	8.37 $\frac{1}{2}$	8.20	54 0 0
High	8.42 $\frac{1}{2}$	8.25	54 0 0
Low	8.05	7.87 $\frac{1}{2}$	54 0 0
Aver.	8.62 $\frac{1}{2}$	8.09	54 0 0

Spelter Prices in St. Louis.

Extreme price fluctuations of Prime Western Spelter, East St. Louis delivery, by months and years.

	1914			1915			1916			1917		
	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.
Jan.	5.25	5.10	5.14	7.62½	5.55	6.33	10.25	17.12½	18.01	10.87½	9.00	9.82
Feb.	5.35	5.20	5.27	10.00	7.65	8.62	21.00	18.50	19.92	10.75	9.37½	10.32
Mar.	5.22½	5.12½	5.15	11.00	8.87½	9.80	20.62½	16.25	17.91½	10.87½	10.37½	10.65
April	5.12½	4.85	5.03	14.00	9.25	11.22	19.25	17.50	18.44	10.50	8.75	9.55
May	5.00	4.90	4.96	21.00	13.00	15.52½	17.75	13.12½	15.75½	9.50	9.12½	9.30½
June	4.97½	4.82½	4.93	27.00	17.50	22.14	13.87½	10.87½	12.62	9.50	9.00	9.28
July	4.95	4.80	4.84	22.75	17.75	20.53	9.75	8.20	8.92	9.00	8.57	8.64
Aug.	6.00	4.70	5.45	18.00	10.75	14.19	11.00	8.62½	9.52½	8.62½	7.75	8.30
Sept.	5.85	4.95	5.33	15.25	13.37½	14.10½	9.62½	8.50	9.06	8.25	7.87½	8.09
Oct.	5.00	4.60	4.81	14.62½	13.25	13.89	10.37½	9.25	9.83			
Nov.	5.20	4.80	4.97	19.00	14.37½	16.87½	13.12½	10.25	11.75			
Dec.	5.65	5.20	5.49	18.00	14.75	16.72	13.12½	9.62½	11.11			
Year	6.00	4.60	5.11½	27.00	5.55	14.16	21.00	8.30	13.57	*10.87½	*7.75	*9.33

* Nine months.

Spelter Prices in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	7.12	5.33	6.52	18.18½	9.97
Feb.	6.40	5.46	8.86½	20.09	10.49
Mar.	6.29	5.35	10.12½	18.10	10.82½
April	5.79	5.22	11.51	18.61½	9.73
May	5.51	5.16	15.82½	15.93	9.48
June	5.23½	5.12	22.62½	12.80	9.45
July	5.41	5.03	20.80	9.70	8.82
Aug.	5.80	5.63	14.45	9.10	8.48
Sept.	5.84	5.52	14.49	9.23½	8.26½
Oct.	5.47	4.99½	14.07	10.01	
Nov.	5.34	5.15	17.04	11.92½	
Dec.	5.22	5.67	16.91	11.28½	
Av.	5.80	5.30	14.44	13.75	

Waterbury Spelter Averages.

	1913.	1914.	1915.	1916.	1917.
Jan.	7.56	5.54	6.55	22.25	15.05
Feb.	6.81	5.70	11.85	22.70	13.80
Mar.	6.56	5.59	12.15	23.15	13.45
April	6.08	5.50	13.85	23.20	11.85
May	5.77	5.38	20.55	21.20	11.05
June	5.50	5.37	25.60	17.40	10.85
July	5.61	5.26	24.90	15.20	10.55
Aug.	5.99	5.66	19.30	13.60	10.05
Sept.	6.13	5.91	17.85	13.70	9.80
Oct.	5.74	5.23	16.85	12.05	
Nov.	5.60	5.38	19.36	14.10	
Dec.	5.44	5.90	21.15	13.20	
Average	6.06½	5.53½	17.50	17.72	

Sheet Zinc Price Changes.

The following table gives the changes in the base price of sheet zinc since June 27, 1916; together with the price of spelter ruling on the same day.

	Sheet Zinc	Spelter St. Louis.
1916—		
June 27	18.00	11.37½
July 6	17.00	9.37½
July 11	15.00	8.62½
October 26	16.00	10.12½
November 10	17.00	11.12½
November 17	18.00	12.00
November 20	19.00	12.12½
November 24	20.00	12.87½
November 24	21.00	12.87½
April 25	20.00	8.87½
April 26	19.00	9.00

Exports of Domestic Spelter and Sheets--Short Tons.

	1916		1917	
	Tons.	Value.	Tons.	Value.
Jan.	10,483	\$3,601,970	15,351	\$4,455,110
Feb.	10,328	3,638,003	15,551	3,933,047
Mar.	8,171	2,902,472	17,408	4,927,420
April	9,133	3,461,914	12,675	3,327,809
May	8,583	3,093,620	19,528	4,758,793
June	11,399	4,036,656	13,095	3,280,111
July	12,708	4,230,805		
Aug.	18,661	5,549,581		
Sept.	19,255	5,150,808		
Oct.	19,994	5,758,357		
Nov.	18,991	5,291,493		
Dec.	15,652	4,774,158		
Total	161,268	\$51,489,837		

Brass special was still held at 8.50c. On the 11th, a large order was placed for September spelter at 7.87½c E. St. Louis basis and prices advanced to 8.30c New York and 8.12½c E. St. Louis: November and December were held ¼c to ½ higher than these prices. In the following few days, with continued buying of small lots, confidence grew and the market was noticeably stronger with prices firmly held. About the same time, reports of conditions at mines and smelters in the West, represented only about 40% of total capacity employed and the majority of those still in operation were said to be working at a loss.

Unconfirmed Report of Resignation of Sub-Committee on Zinc.

On the 18th, the United States Government invited bids on 2,000,000 pounds grade B spelter for extended deliveries and the next day producers were requested to make quotations on 300 tons of prime Western for immediate shipment; bids on the former were opened on the 25th, and on the latter on the 26th. By the 20th, brass special was held at 8.75c minimum and prompt, September and October deliveries were all up to 8.42½c New York, 8.25c E. St. Louis, with November and

December ranging to 8.55c New York, 8.37½c E. St. Louis. On the next day the report that the Sub-Committee on Zinc of the Council for National Defense had resigned, was circulated, the reason given, being that they were unable to advise the Government under the regulations of the Lever bill which placed them in an embarrassing position.

Government Order Awarded to American Metal Company.

Domestic business continued to lag, with consumers buying only in small quantities; war necessities at home and abroad being the mainstay of the industry. A fair business was done at 8.25c E. St. Louis on the 26th and the next day the Government order for grade B — 99½% pure zinc — was awarded to the lowest bidder, the American Metal Company, at 10.67½c per pound. It is understood that this order is only a part of the original request for this grade made earlier in the month and which was cancelled on the 10th. No award had been reported on the bids for prime Western at the close of the month but prices, in the absence of buying and with only small inquiries in the market, were marked down to 8.37½c New York, 8.20c East St. Louis.

Review of Joplin Zinc and Lead Ore Markets For September.

September saw a distinct weakening in both the zinc and lead ore markets of the district. The first three weeks of the month prices for zinc blende ores held steady to \$65 and \$75 per ton of 60% zinc. After that period there was a gradual recession, the minimum base dropping to \$60 at the end of the month, but some ores still selling at the maximum base at \$75. However, the market for those three weeks might really have better been said to have held from \$60 to \$70 for 80% of the product sold. Not only was there a recession in prices, but the demand for all grades of ore appeared lighter as the weeks wore on. Shipments of zinc

ores during the month approximated 44,530 tons, making an average of 8,906 tons per week. This is a falling off of over 350 tons per week as compared with the previous month. The average price for the month was \$68.94 which was a decline of a little better than one dollar per ton.

Calamine ores also showed a decline in price, the average for the month being \$39 as compared with \$43 for the previous month. Shipments of this class of ores for the month reached 2,381 tons, or an average of 476 tons weekly. This is a decline of 37 tons per week. A singular fact about the shipments during the month in both

zinc blende and calamine ores lay in the uniform shipments, each week being practically the same as the previous one. The month opened with surplus stocks at 28,218 tons and closed with 26,310 tons. The lead ore market opened at \$90, holding firmly to this price for the first three weeks of the month. The last two weeks showed an unsettled condition with a variation in base price of \$80 to \$90 per ton. The average price for the entire month was \$89.20. Shipments for the month aggregated 6,363 tons, averaging 1,273 per week.

This is an increase in shipments over the previous month. The month opened with a surplus stock of 5,485 tons and closed with a stock of 4,860 tons.

The month of September marked the breaking point throughout the sheet ground field. Mine managements that had long held on hoping that there might occur some price adjustments which might permit them to continue operations, at last faced the fact that

unprofitable operations must be stopped. This decision has resulted in the closing down of some 40 old plants in the Joplin and Webb City camps. This closing down of plants is in all likelihood a permanent movement, as most of the mills are either already sold and are being moved to Oklahoma or negotiations are being conducted for such purchase and sale. Already the production of the Joplin and Webb City districts is showing serious reduction and this is being reflected more and more in each week's shipment of ore. On the other hand the Oklahoma field is making up to a certain extent this decrease in the output of the older camps.

Part of the decrease in production in the older camps is being caused by a shortage in labor. Shovelers are hard to obtain and those mills that are co-operating are finding it difficult to pull through, thus bringing the cost of production higher instead of lower when just the opposite is needed at the present time.

Lead in September.

Trust Price Reduced \$50 Per Ton—Confidence Severely Shaken By Fear of Increasing Use of Zinc as Substitute for Lead—Lead Ores Off \$15 Per Ton—Month Closes With Market Firm at 8.00c.

The lead industry in September was afflicted more severely perhaps than were some other metals but this was due largely to sentiment in the industry itself which suffered from a lack of confidence generated by the fear that the increasing use of zinc as a substitute for lead in the manufacture of paints and other products—because of the lower cost of zinc—was a serious menace to the trade, which was likely to become permanent and to increase rather than to diminish when the war has ceased. Compared with pre-war values the price of lead has been maintained at higher proportionate rates than other metals since the war began, this being due to the heavy war requirements of the metal, of course.

The sentiment of doubt referred to was expressed by the leading producer,

the American Smelting & Refining Company, in an unprecedented total decline of 3.00c per pound within a period of three weeks. The first and second recessions were each .50c on August 29th and September 5th, followed by two 1.00c reductions, one on the 13th and the other on the 18th. The decline was from 10.50c to 8.00c per pound New York basis and from 10.42½c to 7.92½c St. Louis basis which paralleled the price paid by the United States Government recently for monthly requirements and established the price of lead below that of zinc. Lead ores declined \$15 per ton to \$85 from \$100. Exports of lead during August were 1,543 tons. The foreign market remained stationary in price at £130 for spot and £129 10s for futures.

Trust Price Reduced 2½¢ Per Pound Inside of Two Weeks.

At the beginning of the month, some independent producers and dealers cut prices ½¢ under the "Trust" price established on August 29th, offering lead at 10.25¢ but with small success in obtaining purchasers. The St. Louis lead market was reported to be demoralized and panicky at 10.12½¢. The reduction in the official base price of the American Smelting & Refining Company on September 5th was expected, rather than otherwise, and was met with offers on the outside to sell October, November and December deliveries at 9.75¢ N. Y. By the 10th, the independents and some dealers were offering spot lead ½¢ below the "Trust" and lead ores had declined to \$90 per ton. On the 13th, the reduction of 1.00¢ per pound by the leading producer created a sensation in the trade and was regarded as evidence that the industry was in a very weak and unsettled condition. Again the outside market responded to the reduction but consumers, apparently, were not yet ready to buy and the market was at a standstill when on the 18th another reduction of 1.00¢ per pound carried the price to the 8.00¢ level of United States Government purchases made for monthly requirements. The market was demoralized under very large supplies and with a very light demand for immediate requirements. In the next few days, the belief that the bottom was at last reached

acted as a steadying influence but the market continued weak, prices being alike for all deliveries by the Trust and on the outside sellers. As the days passed without apparent change, inquiries increased but small buying resulted. Lead ores declined \$5 per ton on the 28th and prices for lead were still firm at 8.00¢ when the month closed.

Lead Prices in September.

New York*		St. Louis.	London.
Day.	Cents.	Cents.	£ s d
3 .....	.....	.....	30 10 0
4	10.25	10.18¾	30 10 0
5	10.00	9.92½	30 10 0
6	10.00	9.92½	30 10 0
7	10.00	9.87½	30 10 0
10	9.87½	9.60	30 10 0
11	9.87½	9.60	30 10 0
12	9.87½	9.56¼	30 10 0
13	9.00	8.92½	30 10 0
14	9.00	8.92½	30 10 0
15	9.00	8.92½	30 10 0
18	9.00	8.75	30 10 0
19	8.00	7.92½	30 10 0
20	8.00	7.92½	30 10 0
21	8.00	7.92½	30 10 0
24	8.00	7.92½	30 10 0
25	8.00	7.92½	30 10 0
26	8.00	7.92½	30 10 0
27	8.00	7.92½	30 10 0
28	8.00	7.92½	30 10 0
High	10.25	10.25	30 10 0
Low	8.00	7.92½	30 10 0
Aver.	8.94	8.82	30 10 0

* Outside market.

Aluminum in September

Market Practically Dead All Through September—Prices Off 6¢ Per Pound.

The story of aluminum in September continues in a more accentuated degree the depression and inactivity prevailing in the industry during August. In the total absence of consuming demand prices steadily declined from 1½¢ to 1.60¢ per pound every few days until the total recession amounted to 6¢ per pound each for No. 1 Virgin remelted and for pure 98.99% remelted and 4.00¢ per pound for No. 12 alloy remelted. On the last day with freer offerings from dealers and from second

hands No. 1 Virgin was held at 40.00 to 42.00¢; pure 98.99% remelted was 38.00 to 40.00¢ and No. 12 alloy remelted was 30.00 to 32.00¢ per pound.

A study of fluctuations in the prices of aluminum in New York covering the last four years and including 1917 to date, shows the highest price for No. 1 Virgin 98.99% to have been 67.00¢ in October, 1916 and the lowest to have been 17.37½¢ in July, 1914. The highest to date in 1917 was 64.00¢ in January and the lowest 40.00¢ in Sept.

Antimony in September.

Market Inactive With Sagging Tendency Throughout the Greater Portion of the Month—Net Decline About $\frac{1}{2}$ c Per Pound.

Antimony in September continued to suffer from inactivity and receding prices, until near the close of the first fortnight, when prices reached the lowest level on the 11th 14.00 to 14.50c for prompt and September metal on the basis of duty paid; the decline being from 14.62 $\frac{1}{2}$ c at the beginning of the month for the same positions. October delivery ranged $\frac{1}{8}$ c higher. It was maintained in the trade that these prices were considerably less than the cost of importation of the metal into this country. Several steamers arrived with unsold lots of antimony with the report that the market in the Orient was easier and importers then offered October shipments at 13.50c in bond, which is close to 15.00c duty paid New York.

Late in the day on the 11th, orders amounting to more than 100 tons were placed—surprising the trade which was greatly depressed—at prices ranging from 14.00c to 14.25c duty paid and the next day further quantities were wanted but bids made at 14.25c were met with no response and another 100 tons were sold for 14.50 to 14.62 $\frac{1}{2}$ c duty paid. This buying was the first of any importance that had

been done in several weeks and was continued in smaller lots until the 15th, when prices reached the maximum of the month, 15.50c for prompt, September and October metal. It was claimed that importers had not benefited any in this buying as prices were still too low for any profit to be made over cost of importation which amounted to 16.50c duty paid. To the sensational advance in the price of silver was attributed the increased cost of production in the Orient which was held responsible for the increase in cost to importers in this country.

With a falling off in buying during the next few days prices again receded and on the 18th were down $\frac{1}{8}$ c on all positions. On the 20th consumers and dealers were again in the market buying any bargains obtainable and the decline was recovered and the advance maintained during the remaining days of the month, with fair sales reported each day in wholesale lots at 15.12 $\frac{1}{2}$ c to 15.25c, and in jobbing lots at 15.50c. On the last day the market was still firm at 15.12 $\frac{1}{2}$ c to 15.37 $\frac{1}{2}$ c for prompt and October, and 15.50c for November this being a net advance for the month of $\frac{1}{2}$ c per pound.

Aluminum and Silver Prices.

— New York —

Aluminum.

— Silver —

1916. 1917. 1916. 1917.

Jan. ...	54.33	60.00	56.77 $\frac{1}{2}$	75.63
Feb. ...	57.50	58.05 $\frac{1}{2}$	56.75 $\frac{1}{2}$	77.57
Mar. ...	60.25	59.23	57.93 $\frac{1}{2}$	73.86
April ...	60.00	60.00	64.41 $\frac{1}{2}$	73.88 $\frac{1}{2}$
May ...	60.00	60.00	74.27	74.74 $\frac{1}{2}$
June ..	62.09	59.85	65.02 $\frac{1}{2}$	76.93 $\frac{1}{2}$
July ...	60.15	54.33	62.94	79.01
Aug. ...	59.48	48.48	66.08	85.41
Sept. ...	61.90	42.60 $\frac{1}{2}$	68.51 $\frac{1}{2}$	100.74
Oct. ...	64.55		67.81 $\frac{1}{2}$	
Nov. ...	64.80		71.60	
Dec. ...	63.40		75.76 $\frac{1}{2}$	
Average	60.73		65.66	

Lead Prices in New York.

Based on American Smelting & Refining Company's quotations on 50 ton lots.

1913. 1914. 1915. 1916. 1917.

Jan. 5.35	4.11	3.74	5.94	7.81
Feb. 4.35	4.06	3.82	6.23	8.34
Mar. 4.35	3.97	4.03	6.83	8.98
April 4.40	3.82	4.20	7.50	9.00
May 4.36	3.90	4.23 $\frac{1}{2}$	7.50	9.71
June 4.35	3.90	5.87 $\frac{1}{2}$	7.02	10.76
July 4.37	3.90	5.74	6.54	11.00
Aug. 4.63	3.90	4.75	6.25	10.94 $\frac{1}{2}$
Sept. 4.75	3.86	4.62	6.75	8.96
Oct. 4.45	3.54	4.59 $\frac{1}{2}$	7.00	
Nov. 4.34	3.68	5.15	7.00	
Dec. 4.06	3.80	5.34 $\frac{1}{2}$	7.44	
Av. 4.40	3.87	4.67 $\frac{1}{2}$	6.83	

Lead Prices in St. Louis.

Extreme fluctuations of Soft Missouri Lead in St. Louis.

—1914—			—1915—			—1916—			—1917—		
High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.
Jan. 4.10	3.95	3.99½	3.65	3.50	3.57	6.00	5.45	5.80	8.25	7.30	7.58
Feb. 4.10	3.85	3.95	3.80	3.62½	3.72	6.37½	6.00	6.17	10.00	8.00	9.04
Mar. 3.87½	3.65	3.83½	4.12½	3.82½	3.98	8.25	6.40	7.46	10.00	9.25	9.53
April 3.80	3.65	3.70	4.15	4.07½	4.11	8.12½	7.32½	7.67	9.75	9.00	9.26
May 3.82½	3.77½	3.81	4.45	4.10	4.16	7.45	7.10	7.28	11.50	9.75	10.52
June 3.82½	3.77½	3.80	7.50	4.80	5.76	7.20	6.62½	6.77	12.00	11.00	11.71
July 3.77½	3.72½	3.75	5.67½	5.30	5.52	6.67½	6.00	6.20	11.37½	9.75	10.66
Aug. 3.75	3.70	3.73½	5.20	4.30	4.59	6.75	5.75	6.19	10.87½	10.25	10.59
Sept. 3.75	3.55	3.67	4.82½	4.35	4.53	6.95	6.50	6.71	10.25	7.92½	8.82
Oct. 3.55	3.35	3.39½	4.82½	4.40	4.51½	6.90	6.85	6.87½			
Nov. 3.82½	3.37½	3.58	5.22½	4.82½	5.08	7.25	6.85	6.96			
Dec. 3.70	3.60	3.67	5.42½	5.10	5.26½	8.00	7.20	7.53			
Year 4.10	3.35	3.74	7.50	3.50	4.57	8.25	5.45	6.80	*12.00	*7.30	*9.74½

* Nine months.

Imports of Aluminum.

(In tons of 2,000 lbs.)

	1913.	1914.	1915.	1916.	1917.
Jan.	1,590	616	636	425	1
Feb.	996	635	291	324	14
Mar.	1,007	741	383	223	2
April	1,773	678	153	406	3
May	1,169	586	209	696	none
June	880	548	893	325	6
July	1,216	709	356	208	
Aug.	668	736	245	106	
Sept.	529	636	521	12	
Oct.	560	1,283	93	247	
Nov.	528	406	61	348	
Dec.	677	516	426	4	
Total	11,593	8,090	4,267	3,324	26

Exports of Domestic Lead.

(In tons of 2,000 pounds.)

	— 1916 —	— 1917 —
Jan.	7,192	\$790,447
Feb.	10,246	1,392,624
23	40.00	88.25
24	48.00	88.25
25	48.00	88.50
26	47.00	88.50
27	47.00	88.75
28	47.00	89.75
29	47.00	90.75
30	47.00	90.75
31	47.00	90.75
High	50.00	90.75
Low	46.00	79.00
Aver.	48.48	85.41

Aluminum, Silver, and Antimony Prices in September.

— New York —			
Day.	Aluminum. Cents.	Silver. Cents.	Antimony. Cents.
1	.....	90.75	.....
4	..... 46.00	93.62½	14.62½
5	..... 46.00	95.62½	14.50
6	..... 45.00	95.62½	14.50
7	..... 45.00	96.62½	14.37½
8	.....	96.62½	.....
10	..... 44.50	97.62½	14.25
11	..... 43.00	98.62½	14.25
12	..... 42.00	98.62½	14.87½
13	..... 42.00	98.62½	15.25
14	..... 42.00	100.50	15.25
15	.....	100.50	.....
17	..... 41.50	102.50	15.25
18	..... 41.50	103.50	15.06½
19	..... 41.50	105.50	15.12½
20	..... 41.50	106.50	15.25
21	..... 41.50	108.50	15.25
22	.....	108.50	.....
24	..... 41.50	108.50	15.25
25	..... 41.50	108.50	15.25
26	..... 41.50	106.50	15.25
27	..... 41.00	101.62½	15.25
28	..... 41.00	97.62½	15.25
29	.....	96.62½	.....
High	47.00	108.50	15.50
Low	40.00	90.75	14.00
Aver.	42.60½	100.74	14.95

STEEL AND METAL DIGEST

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America and the War.

The past month has served to bring home what a momentous decision it was for ourselves and the world that we made seven months ago when we cast in our lot with the Allies, not only in defense of our rights that had been trampled upon but to preserve democracy and liberty against the common enemy, whose success would mean the destruction of all our country stands

for. The magnitude of the undertaking and the enormous sacrifices we must offer on the altar of liberty, in life, happiness and those other material things which in long years of peace and prosperity had seemed to some to be almost all we lived for, is now for the first time being appreciated, and what was at first regarded by some as a Government proposition, has become an intensely personal one. Our first lists of killed and wounded have been received, and we now find at every turn our personal and business interests beginning to suffer. We now fully realize we are at war, and that it is to be a long, terrible contest, and must be felt and waged by every individual, and by some of us to the very death. We are gradually arriving at the realization of what must be our inspiration "the Cause", and with it will be created "the Vision" of the conditions which, with God's help, we are determined shall prevail in the world in the future. Up to the present we have obeyed our country's call and met every personal or material demand made on us as a patriotic duty, but now we are realizing that deeper and more sacred obligations must steel our hearts and hands, the obligations of humanity, and for which we are prepared and ready to give all we have and are.

Recent developments in Russia and Italy, and particularly in the early days of this month, emphasize the wisdom of those counsels in national affairs, that looked to a long and hard participation in war by the United States. It

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was better to prepare for a great struggle and find we had over-estimated the necessity, than to prepare for a little struggle and find the necessity otherwise.

There is every probability now that our work and our sacrifices have only barely begun. It is an enormous undertaking for the richest nation on earth, and from the stern necessity of the case we must measure up to the standard. It is incidental but yet important that we have traditions, well nigh forgotten in our years of ease, to which we must live up to. Furthermore, while Germany has sought to belittle both our spirit and our capacity, it is not so with our Allies. They have turned to us with the greatest expectations. They have paid us the compliment, embarrassing in its way, of expecting much from us, rating us more highly perhaps than we deserved, and we owe it to them as well as to ourselves to make good as far as we can with the last ounce of effort.

The co-ordination of industries is proceeding fairly well. There is friction at times. Some things are done that perhaps had better have been left undone, and some things apparently essential are overlooked or deferred, but on the whole, considering what we were one year ago, or what we were before this war started, things are moving fairly well.

In view of the much more serious aspect of our participation in the war, in the light of the most recent developments, it is well to reflect that some of the things that have been criticised do not amount to so much. There has been criticism that we should have had a fair-sized fighting force on the line before this, but now one can see that that in all probability is a small matter. It is the large fighting force we shall eventually have that will tell. Also there was criticism that we did not have a batch of rifles ready, but a small batch of rifles ready in 1917 is not so important, in view of the present situation, as a very large batch in 1918, and so with many other things to which the same answer can be given.

At the session convening next month, Congress will, in all probability pass

additional measures for still heavier taxation, and we must be prepared to shoulder those taxes. The opinion of a few months ago must be altogether revised. Then there were highly prosperous industries throughout the country, and the comment was that very high taxation might detract from the prosperity of those industries. That viewpoint must be abandoned. Prosecution of the war to the fullest extent that we can prosecute war, will control all these industries, making some active and some less active. The activity of an industry is not going to be measured by the amount of profit that is promised. Other and sterner necessities will dictate. Profits will be purely incidental. Very likely all tax measures will fall short, in actual operation, of raising the revenues expected of them, and as time passes need for high tax rates, to produce the same revenue, will increase. The utmost wisdom will be called for to distribute the taxes where they can be borne, for while it is proper to raise as much revenue as possible by taxation, it merely does harm to enact taxes that cannot be paid without curtailing our industrial power.

For the steel industry the prospect is an inspiring one. It has been marshaled in marvelous fashion to the prosecution of the war. The steel trade is thinking of nothing but doing its very best, and its very best is a great deal, for the steel industry is a very capable industry. It is of such a nature that it has trained those in it to think quickly and straight. The iron and steel industry will not fail America at this time.

In metals our productive powers and the manner in which they are made available will also be one of our strongest weapons. The copper, lead, and spelter industries also will not fail America, and the trade will cheerfully do their "bit", no matter what sacrifices they are called upon to make.

But in this co-operation of the business of the country with the Government, America will demand that labor does its share, and the sooner labor realizes this the better. To imagine that labor is to be the only interest that is not to make sacrifices, in fact if, as there are indications, that the necessi-

ties of our country at a time of stress are to be exploited, then perhaps the request for co-operation may be changed to the law of conscription.

We are going to win this war no matter how long it takes and no matter what sacrifices or radical steps it entails.

Government Iron and Steel Prices.

Basis Prices Set for Practically All Blast Furnace and Steel Mill Products.

The three batches of iron and steel prices announced respectively September 24th, October 11th and November 5th include basis prices for practically the entire line of products of the blast furnaces and steel mills. No basis prices have been set for any wrought iron products.

The prices represent recommendations made by the War Industries Board to the President, and approved by him, being announced at Washington as the result of a voluntary agreement between the board and the manufacturers. They are on the principle of "one price for all" in accordance with the doctrine urged by President Wilson in his "appeal" published July 12th. This principle is that when sales are made by the producers they shall be made at the same price to the Government, its Allies, and the general public. It does not carry with it an obligation to sell to the public at any specific time or for any specific period, but there is the understanding, really superfluous in fact, that the manufacturers make every effort to maintain production. "One price for all" is no new principle, representing in fact the general policy pursued by the large mills, and of course the blast furnaces, for many years. It was necessary to restate and adopt it, at this juncture, because otherwise there would have been a difference between prices charged the Government and prices charged the ordinary buyer. There is no restriction upon reselling at a higher price if done as a distributing or brokerage proposition, but resales at a speculative or unreasonable profit are strictly under the ban. Jobbers can conduct their business in normal manner, as distributors, and when a steel mill

conducts a jobbing department it is to be conducted as a store proposition, the fact that it is owned by a steel producer being purely an incident.

The Three Price Announcements.

Below are given the basis prices as announced at Washington, with such interpretation as is necessary for a general understanding of the schedule. Details as to analyses, specifications, differentials, extras, etc., are to be worked out chiefly by committees of the American Iron and Steel Institute, and several announcements have already been made.

September 24.

Lake Superior iron ore, the 1917 schedule of prices first promulgated late in 1916 for the 1917 season: Old range Bessemer, \$5.95, non-Bessemer, \$5.20; Mesabi Bessemer, \$5.70, non-Bessemer, \$5.05, at Lake Erie dock. It is understood that these are subject to modification according to any possible departure that may be made from the standard \$1 lake freight rate of the 1917 season.

Pig iron, \$33. The initial understanding was that this should apply to basic and No. 2 foundry iron at valley furnaces. By open market sales and by formal announcement it has become established that the \$33 maximum price is to rule f.o.b. all furnaces for No. 2 foundry and basic, No. 2 foundry being established at silicon 1.75 to 2.25%. Grade differentials are established at 50 cents per number and forge becomes \$32. Malleable is \$33.50 and Bessemer \$36.30 while low phosphorus copper bearing is \$50 and copper free \$53. Southern or warm blast charcoal iron .40 to .60% phosphorus and 1 to 2% sili-

(Continued on page 512.)

Business Trends.

Still Higher Commodity Prices

No one needs the assistance of index numbers to be sure that the trend of commodity prices, more particularly of foodstuffs, runs toward higher levels. Months have elapsed since predictions were made that zenith point had been reached, but as time passed the market places, instead of being treated to views of declining prices, have been compelled to witness still more remarkable ascents. These remarks do not, however, apply to those products that have been subjected to the price-fixing fiat of the Government, but the ease thus far superinduced by governmental action may be likened to the proverbial drop in the bucket.

So it has again come to pass that the index numbers published by "Bradstreet's" and "Dun's" reflect commodity prices at their highest level. The latest index of the first named authority being \$16.9117, represents an advance of 1.6% over September 1, of 40.4% over October 1, 1916, of 69% over the like time in 1915, and of 95% over July 1, 1914, a short time prior to the outbreak of the European war.

Recovering all and more of the previous month's moderate recession, "Dun's" latest index number stands at \$219.679 which discloses a rise of 2.2% over September 1st. Going back to the bottom point on its record, \$72.455 on July 1, 1897, "Dun's" points out, that the gain since then exceeds 200%.

Within the month September 1 to October 1 this year prices in England fell four-tenths of 1%, thus indicating tendencies that do not harmonize with those witnessed in the United States; but in this connection it is to be remembered that England probably has a strong upper hand on price control, whereas in this country the matter, so far as governmental regulation is concerned, is still in what may be termed the initial stage.

A wide range of price movements is set forth in the following tables in which are given "Bradstreet's" index

numbers over a period of years:

	1913.	1914.	1915.	1916.	1917.
Jan.	9.4935	8.8857	9.1431	10.9163	13.7277
Feb.	9.4592	8.8619	9.6621	11.1415	13.9427
Mar.	9.4052	8.8320	9.6197	11.3760	14.1360
April	9.2976	8.7562	9.7753	11.7598	14.5769
May	9.1394	8.6224	9.7978	11.7485	15.1203
June	9.0721	8.6220	9.7428	11.6887	15.4680
July	8.9522	8.6566	9.8698	11.5294	16.0680
Aug.	9.0115	8.7087	9.8213	11.4414	16.3985
Sep.	9.1006	9.7572	9.8034	11.7803	16.6441
Oct.	9.1526	9.2416	9.9774	12.0399	16.9117
Nov.	9.2252	8.8620	10.3768	12.7992	
Dec.	9.2290	9.0354	10.6473	13.6628	

Yearly Averages.

1900	.....	7.884	1909	.....	8.515
1901	.....	7.575	1910	.....	8.988
1902	.....	7.876	1911	.....	8.713
1903	.....	7.936	1912	.....	9.187
1904	.....	7.919	1913	.....	9.208
1905	.....	8.099	1914	.....	8.903
1906	.....	8.418	1915	.....	9.853
1907	.....	8.905	1916	.....	11.825
1908	.....	8.009	1917	.....	15.301

Unusual Activity in New Enterprises.

Returns now available disclose the fact that many new enterprises were organized during the past month. Incorporations in the Eastern States with an authorized capital of \$1,000,000 indicate a total of \$308,513,700. This is an increase over the preceding month of \$106,013,700, while the total is larger than in October a year ago by \$1,745,000. The grand total of all companies chartered with a capital of \$100,000 or over covering all states amounted to \$381,145,700, comparing with \$259,932,000 in September. In October a year ago the figures were \$365,050,700. This unusual activity among promoters of new enterprises is prominently associated with the huge Government war expenditures, which it estimated involved \$1,000,000,000 during the past month, thereby establishing a new high record. A \$2,000,000,000 month, Federal officials assert, is not far off. Among the concerns that figure most conspicuously in the past

Business Trends.

month's returns covering incorporations were oil and gas, chemical, shipping and munitions concerns. The month's record of incorporations is really a remarkable one, considering the high money rates that prevailed in October and also the fact that bankers and representatives of investment houses gave up so much of their attention to the second Liberty Loan campaign.

Following are the comparative figures as specially compiled by The Journal of Commerce and Commercial Bulletin of companies incorporated in the Eastern States during the last three years, with an authorized capital of \$1,000,000 or more:

	1917.	1916.	1915.
Jan.	\$244,450,000	\$270,995,000	\$51,150,000
Feb.	283,815,000	366,995,300	53,950,000
Mar.	281,000,000	194,750,000	70,050,000
April	361,510,000	166,650,000	32,200,000
May	388,481,000	209,735,000	78,950,000
June	352,584,000	264,350,000	181,247,100
July	416,350,000	217,662,500	71,100,000
Aug.	382,100,000	113,472,000	67,100,000
Sept.	202,500,000	164,700,000	286,625,000
Oct.	308,513,700	303,768,700	208,695,000
Total	\$3,221,303,700	2,177,988,500	1,101,067,100
Nov.		200,407,500	190,075,000
Dec.		230,850,000	135,125,000
Total		\$2,708,326,500	\$1,426,267,000

Favorable Failure Reports.

With the smallest number of failures for the period in over a decade, and the lightest indebtedness, with one exception, since 1909, the October insolvency record maintains the highly favorable features which have characterized the returns throughout this year. Commercial defaults last month numbered 1,082 and involved \$12,812,012 of liabilities, as against 963 reverses in the shorter month of September for \$11,903,051. But while the October mortality somewhat exceeds that of September, the number is well below the 1,240

failures of October, last year, and is, in fact, less than in any year back to 1906. Moreover, the aggregate debts, though larger than the \$10,775,654 of October, 1916, are materially under those of any October in eight years, the 1909 total being \$12,529,862. Considering the uncertainties arising from the war, and the many drawbacks in business, the insolvency statistics continue to make a remarkably good exhibit.

Record Bank Clearing

While bank clearings for September evidenced repression, payments in October more than made up the ground lost in the preceding month. Of course, bank clearings always tend upward in October, but the significant fact in respect to last month's operations is that the total swept away any previous record. This development, needless to say, was superinduced by the outpouring of subscriptions for the second Liberty Loan, by high prices for commodities, activity in industry, large governmental orders and relatively favorable movements in the larger lines of trade. In any event, bank clearings for October aggregated \$27,976,336,376, which sum reflects an increase of 15% over September, of 3.2% over the preceding high point, established in December, 1916, and of 9.5% over October last year, when payments were also exceptionally heavy.

Increase in Pig Iron Output.

Pig iron production increased in October to 3,303,038 tons, or 106,550 tons a day, against 3,133,954 tons in the 30 days of September, or 104,465 tons a day. More furnaces blew in and the net gain for the month was 10. The 355 stacks active November 1 have an estimated capacity of 109,059 tons a day, which compares with 107,250 tons for the 345 furnaces in blast October 1. The year's output of coke pig iron up to November 1 was about 32,100,000 tons, or 450,000 tons less than for the first ten months of 1916.

Price Control and Distribution.

The recommendations of business men through the Chamber of Commerce of the United States that the Government during the war control prices, production, and distribution under certain circumstances, make it desirable to consider the nature and extent of what has already been done by the Government in this direction.

Purposes of Control.

Control of prices by the Government may be for the following purposes:

1—To enable the Government or the public, or both, to purchase at prices below those established by market conditions;

2—To substitute for the ordinary method of distribution by price a method of distribution of product on a basis of the country's requirements in connection with the prosecution of the war;

3—To prevent the making of large profits out of the war and thereby, among other things, eliminate a cause of great discontent on the part of labor.

Prices Dealt With.

Our Government has fixed prices on copper, steel, coal, coke and pig iron. In these cases, the prices to the public and to the Allies have been the same as that to our Government, and the prices have been substantially below those prevailing in the market at the time. Therefore, the control of these prices by the Government has accomplished the first of the three purposes indicated above.

Distribution.

There has not, however, been established thus far in any case a method of distribution in connection with the control of prices. Priority on specific orders has been granted, but no general effort has been made to distribute production among those whose requirements are most urgent, considered from the standpoint of national defense. In fact, the activity of the Priority Committee of the War Industries Board has thus far been confined almost entirely to the granting of priority on Government orders. No general rules of distribution have been laid down. No announcement has been made of a classification of essential and non-essential

industries. Priority decisions are still made on the merit of the particular application and not on the thorough-going consideration of the general requirements of industry. This makes it quite evident that, up to the present time, the Government has not attempted to accomplish purpose number two of the above classification.

Level of Prices.

In the next place, wherever prices have been fixed by the Government consideration has been given to the necessity of stimulating production and prices have been established at a sufficiently high level to accomplish this purpose. This has, of course, produced high prices and has in a large number of cases resulted in large profits—far beyond those earned in normal times. The fixing of prices has not been accompanied by an arrangement under which excess earnings are paid into the public treasury,—some such arrangement as that which has been adopted in England, in connection with the "controlled" plants, as set forth in War Bulletin number 14. In removing the discontent of labor at high war profits, taxation, because of its remote application, is unsatisfactory even when directed at war profits, and such a general taxation measure as that recently passed by Congress, is less effective.

Elements in Situation.

Therefore, as large profits are being made even in industries where the Government has fixed prices, the Government has not yet been able to enter upon the accomplishment of the third of the purposes above set forth.

It is not unnatural that the Government should proceed slowly and hesitatingly with such unprecedented action as the control of prices and distribution. The very magnitude of the undertaking restrains the vigor and energy which would characterize the effort to solve a less difficult problem. In any event, however, success is only relative and in the early stages may be lost sight of entirely because of unavoidable confusion.

This makes it all the more important

to distinguish between the results of partial effort which does not even endeavor to secure full results and those of thoroughgoing, well-developed effort. When the Government has not endeavored to establish a new method of distribution to take the place of distribution by price even in the instances where the Government has controlled prices and where direct effort is not made to prevent the earning of large profits where prices have been fixed, it is not to be expected that production will be distributed on the best basis for the national defense or that discontent on the part of labor will be avoided.

Difficulties to Be Avoided.

In some respects the first attempts of the Government at price control have been such that most business men will regard disappointment or failure as inevitable. To business men any fixing of prices to a vast multitude of users is an undertaking of almost insurmountable difficulty and absolutely hopeless if not accompanied by some method of distribution.

Where no mechanism is developed to take the place of distribution by price, and nevertheless an effort is made to control retail prices of a product in urgent demand, there will be of necessity wholesale attempts at evasion. The man whose house is cold endeavors to induce a dealer to secure coal for him by making gifts (often in the form of wagers) or by purchasing articles of no value. Similar conditions have produced the same experience for many hundreds of years.

General Basis for Prices.

There has not been developed as yet a clear policy with regard to securing the assistance of business men in connection with the control of prices. In some cases the Government has called upon those interested in a business to participate in the actual fixing of the prices. This has resulted in a fixing of prices by negotiation,—which is clearly harmful. In the judgment of the undersigned Committee, men elected by an industry to represent it should be called upon by the Government for full information which would be helpful in fixing prices, but the actual determination of the price should

be a semi-judicial function.

This means that wherever prices are determined by the Government it is essential that such prices should be arrived at according to some general plan and upon a definitely declared basis. Such general principles should be followed so far as possible wherever the government acts to control prices and would serve as a yard stick or standard between different industries.

In other cases the Government has not consulted business men but has conducted independent investigations and announced prices without giving any information as to the basis on which such prices were reached. This necessarily creates antagonism on the part of business men who are unaccustomed to autocratic control, and prevents the co-operative response which might be expected from business men if they had a clear understanding of what was being done.

Actual Conditions.

Knowledge of actual conditions existing in business in its intricate ramifications can be acquired only by years of intimate contact. In the judgment of business men it is essential to success in Government control of prices and distribution to establish a basis upon which this knowledge and information of business men can be at the service of the Government under such circumstances as not to be influenced by selfishness or the need of self-protection.

Success in price control is to be expected only where made in connection with distribution and when the attempt is made as near as possible to the source of supply; also when advantage is taken of such helpful aids as the control of railway transportation; and furthermore when the Government has the assistance of business men of knowledge and experience, furnished on a disinterested basis and under such circumstances as to bring about co-operation in the industries which such men represent.

COMMITTEE ON CO-OPERATION
WITH THE COUNCIL OF NATIONAL
DEFENSE.

Waddill Catchings, Chairman.

Attest:

ELLIOT H. GOODWIN, Gen. Sec.

The Institute Meeting.

The American Iron and Steel Institute held its 13th general meeting at Cincinnati Friday, October 26.

President Gary in his address at the opening of the meeting recounted how "from an abundance of caution" the general committee and sub-committees of the Institute which were serving as auxiliary to the Advisory Commission of the Council of National Defense had been withdrawn on account of a proviso in the Food Control Act, and a general committee and sub-committees of the Institute had been appointed, to report their recommendations from time to time to the War Industries Board.

The prices adopted by the Government had been somewhat lower than expected but were accepted from motives of patriotism and because in the main they came within the original proclamation of the Chief Executive. If disparities in prices, comparing semi-finished and finished products, are discovered, they should be removed. If some manufacturers should profit more than others by the prices, the war taxes will largely offset the differences, the war taxes running in some cases as high as 50%.

A high tribute was paid to the "comprehensive and efficient" work of the various Government agencies at Washington. President Gary saying: "I do not hesitate to say that, so far as there has been opportunity to observe, the results in Washington have excited my surprise and admiration." Particular mention was made of the fact that the work is being done largely by very able business men who have volunteered their work without compensation.

The address concluded with a brilliant reference to the necessity of the war being supported by all the industrial forces the country has at command and is given in full on the next page.

Eugene P. Thomas, president of the United States Steel Products Company, read a paper on "The export trade as affected by war" and insisted that after the war there will be a heavy demand for steel sufficient to keep the

industry on a stable basis for a considerable period. There will be great opportunity for commercial and industrial development in the world.

Joseph G. Butler, Jr., on "Fifty years of iron and steel", pointed out that he had really had 60 years experience, covering the greatest progress the world has ever known. Sixty years ago the production of steel, "blister steel" was only 2,000 tons. There was no coke, no furnace tops, no hot blast stoves.

Samuel S. Wales, electrical engineer of the Carnegie Steel Company, in a paper on "Modern Electric Motors in Steel Mills" urged the necessity of electric driving practically throughout steel mills. One of the latest achievements is the driving of a billet shear, abandoning the flywheel and clutch and starting the motor for each cut. Types of reversing and non-reversing motors were discussed in detail, for the various mill drives. The first large installation of electric motors was made in the Edgar Thomson Works for rolling light rails, power equal to 3,000 kw. being generated and transmitted only a short distance at 250 volts d.c., the equipment being in perfect operating condition today.

Henry F. Pope, president of the National Malleable Castings Company, discussed "Malleable Iron and Its Uses", pointing out that while the tensile strength of malleable iron is lower than that of cast steel, its elastic limit is as high, and problems of casting are less difficult as the iron is fluid at a lower temperature.

W. Vernon Phillips, of the Perry Buxton Doane Company, on "Iron and Steel Scrap" expressed his good fortune at being permitted to tread on virgin ground, in that his subject had never before been discussed at Institute meetings. The total consumption of iron and steel scrap, in 1916 was in excess of 12,000,000 tons, exclusive of

scrap used for chemical and other unusual purposes also exclusive of borings and turnings used in the blast furnace, which would make 2,000,000 to 5,000,000 tons additional. There was 9,646,617 tons melted in open-hearth furnaces, including a small quantity in electric furnaces, approximately 2,000,-

000 tons was worked in rolling mills by various methods busheling, puddling, piling and direct rolling, while 600,000 tons was converted by mills rolling old rails into lighter sections, angles, concrete bars and by mills rolling axles, shafting, etc., into steel bars

Iron and Steel Price Fixing and the War.

Address of Judge E. H. Gary before American Iron & Steel Institute, Cincinnati, O., October 26, 1917.

At the last annual meeting of the Institute reference was made to the appointment and the activities of a general committee and sub-committees of the iron and steel industry. These committees were appointed and were serving as auxiliary to the Advisory Committee of the Council of National Defense. However, in view of special legislation of a recent date concerning transactions of a business nature between the Government and private interests, it was, from an abundance of caution, decided to abrogate the appointment of these committees; and immediately thereafter your president, after consultation with his associate directors of the Institute, named a general committee and also sub-committees representing the different special lines of the industry. The general committee and also the sub-committees, directly or through the general committee, have been reporting their recommendations from time to time to the War Industries Board at Washington consisting of Messrs. Frank A. Scott, Chairman, Robert S. Lovett, Robert S. Brookings, Bernard M. Baruch, Hugh Frayne, Admiral Frank E. Fletcher and Col. Palmer E. Pierce. This Board in turn has reported its recommendations to the President for decision. From the published accounts you are familiar with the results which have been reached.

Many of you were disappointed when the prices of the commodities in which you are particularly interested were announced. You had expected larger figures. You had been receiving from your customers, in the ordinary course of trade, much more favorable results. Your profits will be less than you have believed you are entitled to. Your costs of production and construction are increasing by leaps and bounds. Many manufacturers have struggled for existence in periods when business conditions were bad, trusting to the future for improvement, and they have argued that if the law of supply and demand should govern under such circumstances, it should control at all times.

All these things have been considered by the iron and steel committees, and by the representatives of the Government as well. It is only stating facts to say that the former have endeavored to represent the manufacturers conscientiously, intelligently and forcefully and that the members of the War Industries Board have at all the hearings given patient attention, thorough investigation and careful consideration to every claim presented with, the sole purpose of doing justice both to the Government and to the individual.

The members of our committees have insisted upon higher prices than the ones finally agreed upon, but they consented to those which were fixed because they were influenced by motives of patriotism and also because they were convinced that, in the main, the prices came within the original proclamation on the subject by the President which, from the standpoint of the Chief Executive of the Nation, was reasonable.

If, as between the different products, semi-finished and finished, disparities in prices are discovered, then, so far as practicable, they should be removed. The intention of every one connected with the ascertainment of facts and the determination of prices is above reproach.

It may be suggested that some of the producers may realize larger profits per unit than others owing to greater diversity of commodities, favorable location, better organization, larger production or other facilities which tend to lower costs, but if so, the progressive rates of Governmental excess profits tax, depending upon the relative net earnings of the different producers, will largely offset the difference in net result. It is estimated some of the manufacturers will be obliged to pay to the Government as high as 50% excess profits tax.

The Committee representing the steel industry has labored hard and faithfully in the performance of its duties. It has carefully considered every suggestion which has been made, from time to time, by those engaged in the industry relative to their

rights, interests and claims. The facts concerning capacity, advantages or disadvantages, and the claims of cost and profits of each, have been gathered, so far as practicable, with the purpose of determining the relative positions, rights and obligations of all; and these have been honestly presented to the War Industries Board, and, before their appointment, to the Secretaries of War and Navy, and to various Boards created by the President or by the Council of National Defense. The general committee has met frequently in New York and Washington, giving these matters attention in preference to all others and regardless of personal comfort and often without adequate rest. Omitting the chairman, who has been frequently relieved of work and favored in many ways, I state with emphasis for the benefit of those who are not fully informed that the other members of the general committee, as well as the members of the sub-committees, are entitled to the gratitude of all others who have been interested in this work. In the collection and distribution of figures affecting the different branches of inquiry the American Iron and Steel Institute has rendered valuable assistance and is entitled to and has received much praise from the members of our committees and also from the Government's representatives.

And the members of our committees, better than those who have not had similar experience during the last year, recognize with appreciation the comprehensive and efficient work that has been and is being done by the large number of Governmental agencies in Washington. There has been created a vast business organization, with scores of departments, and a larger number of sub-departments, which are carrying on the greatest of all great business undertakings; and, notwithstanding the unfavorable criticisms, which have been made, may if not most of which, are wholly unjustified, it should, in truth, be said this colossal combination of diversified, ramified and intricate business activities, involving almost every phase of political, social, commercial, financial and industrial life, is being, has almost been, whipped into a smooth running machine. That mistakes have been made, that steps have had to be retracted, that sometimes action has been too hasty and other times too deliberate, that red tape rules, created by legislation or otherwise, occasionally have interfered with the best results, may be assumed; but with patience, skill, persistence, vigor and success, the great varieties of business enterprise as time elapsed have been better and better coordinated and the whole structure developed nearer and nearer to the point of perfection. I do not hesitate to say that, so far as there has been opportunity to observe, the results in Washington have excited my surprise and admiration.

And the most wonderful feature of this work is not its magnitude, nor even its results, which are becoming exposed to the view of the general public, but rather it is

the fact that the work is very largely under the management of very able business men and women who are volunteers and are devoting their time and skill and energy without compensation, or hope or desire for reward of any kind, except in the consciousness of duty performed. There are large numbers who have disregarded personal interests, their personal comfort, and many, even their personal health. These men and women are outclassed, in disposition to sacrifice and to serve, only by the members of the Army and Navy who bare their breasts to the destructive forces of warfare.

Of this vast civil army of effectives, the staff that of late the representatives of the Institute and its members have appeared before is the War Industries Board, already referred to. The members of this Board have other matters of interest which need attention. Some of them had hoped to retire from active business and to enjoy a well-earned rest; some of them were in the very prime of life and were actively connected with important business enterprises with every prospect of a long and successful career. All are possessed of vigor of mind and body. Not one of them personally considers himself or any other individual or any interest that may appear before the Board. They have no one in mind to favor or to punish. They are considerate and respectful, but they are obdurate when a claim is presented which seems to them to be unfair or unreasonable. They serve their country by their effort to be practical, discriminating, reasonable, just. And the assistants to this Board, representing a diversity of talent and experience, are of great benefit to the Board in the ascertainment of facts and the application of principles and comparisons. Some of them you know personally, and the high qualifications of all of them most of you are acquainted with.

Reference has been made to the general business organization of the Government and its membership for the purpose of suggesting to each of us present to-day our duty in this time of trouble and sadness; and to the character, disposition and qualifications of the members of the War Industries Board for the purpose of making prominent the inference that the steel committee could not, if it desired, secure from this Board at any time a determination or recommendation to the President which was unreasonable; and that every one would be ashamed before such a body of men to urge any claim he did not believe to be sound and proper.

For the purpose of making deductions further on, it is deemed appropriate to again make reference to the war in Europe. This has become an old subject, but, as the years roll by, has, to a greater rather than a lesser extent, absorbed our attention.

Whatever opinions we may have heretofore entertained concerning the motives, intentions and efforts of the Prussian Germans the evidence which has been accumu-

lated from time to time through reliable sources has forced the conclusion that for a long period preceding August 1, 1914, there was perfected a systematized plan for precipitating or of provoking an international military conflict which it was expected would result in victory and final geographical and political domination by Germany of the whole of Continental Europe and Great Britain and later of Canada and the United States and finally to include such parts of South America, Africa and Asia as might be considered desirable from the standpoint of a powerful, aggressive, ruthless and tyrannical monarchy. In short, Prussian Germany was obsessed with the ambition to rule the world.

The history of Napoleon, of Caesar, of Alexander and other great military leaders had been studied with the view of adopting and adapting the most powerful traits of each. A military organization superior to any that had ever before been created had been built up. There had been formulated a system which included the most effective arms and ammunition and other military supplies; transportation facilities which when fully made known, astonished the business world; the creation of a spy system more extensive, more dastardly and more powerful than any previously attempted; the perfection of a bureau of information, publication and detailed distribution which even to this date is provoking internal strife and national hostility in many other countries.

Besides the immense quantities of food stuffs, war material, equipment of all kinds and everything believed to be essential to carrying on an aggressive and extended war, had been gathered in warehouses for use when war should begin. The mere hint at these conditions is sufficient to recall to your minds the innumerable ways in which a comparatively few men, who were parties to the conspiracy, determined upon for the purpose of rapidly forcing the passage into Belgium, France, England, the Balkans and in fact every other coveted country which would not voluntarily become a party to the conspiracy. Almost by a miracle the aggressors were prevented from entering the City of Paris, of possessing substantially all the raw products necessary for the manufacture of iron and steel located in France and of so disabling that nation that she would have been of little value in the conflict; and after that, as we can see, of proceeding, sooner or later, to Great Britain.

It usually happens that the worst criminals make some fatal mistake in the execution of malignant plans, however carefully studied. Germany made two mistakes at the outset. She believed she could enter Belgium and France without any interruption, but she was mistaken by a few most important days. She was mistaken in assuming that she could violate her solemn treaty and trespass upon the territory of Belgium, on the ground that treaties were mere scraps of paper, without offending the

sense of honor and decency of the entire neutral world. From the time Germany deliberately and maliciously broke her agreement to observe the neutrality of Belgium her doom was sealed, although it may and likely will be some time before full punishment is administered.

All who are here will be able to supply many of the omitted important features of the indictment which the world will hereafter record against Prussia and Germany, only a skeleton of which has been presented.

The war already has been long and terrible. The end is not yet in sight, although, of course, there is always a possibility of a sudden, if unexpected break and collapse. Except on the basis of a conclusion satisfactory to the United States and her Allies in this war, there is no prospect of any early termination of hostilities. It is clear we must prepare ourselves for a long and uninterrupted continuance of hostilities. The foe is strong and desperate. It must be overcome by physical strength and endurance, unless the masses of the people of Germany shall become acquainted with the facts and forcibly insist upon having a voice in determining the policy of the nation.

The Allies are possessed of the necessary elements of strength. They have at least three men against two and they are, or soon will be, more fit than the soldiers of the enemy, man for man. The next thing in importance is food. In this respect the resources of the allied countries for each person is far superior to those of the enemy. The next in rank of necessity is steel. Without this neither side could maintain an adequate offense or defense on any battlefield provided the opposing forces were well supplied. The Allies have a productive capacity of steel three or four times as large as the Central Powers. Of course, with steel and what is produced from it, goes hand in hand the necessary explosives. But there is no lack of material to provide an abundance.

Underlying the utilization of all the military resources of the Allies is the question of money and credit. The country which is greatest in finances, all other things being equal, will eventually succeed. The financial strength of the allied nations is many times greater than those of Germany and her allies.

It was suggested at the annual meeting of the Institute in May that if the Allies had the best and most effective types of aircraft, outnumbering those of the other side five or ten to one, they would have a decided advantage and would thereby materially shorten the conflict. But our side to the conflict should secure and maintain a superiority in each division of the war program. We must have more soldiers, better equipped and better supplied, more and better guns of the best character and quality, greater quantities of the most effective ammunition, a larger number of the finest

types of aircraft, the fastest and most destructive vessels of offense and defense on the seas, the best and quickest transportation facilities by sea and land and every other facility of practical utility, of sufficient strength and power to overcome all resistance.

The Allies are in the financial condition to provide themselves with all these essentials, if they have the brains, the courage and the persistence. No intelligent person who is partial to the cause of the Allies or who is entirely impartial in considering the merits of both sides will admit that there is any doubt the peoples of the allied countries are possessed of mental capacity fully equal to the peoples of any other country.

If the members of the Iron and Steel Institute agree with what has been said thus far, as from a long and intimate acquaintanceship I believe they do, then it is easy to determine and to follow the line of duty. We occupy a position of the highest importance in the present war. Our country and its allies in the international conflict are in need of every pound of steel which can be produced in this country and which can be used for war purposes. To insure this supply, every furnace and mill having relation to the subject must, without interruption, produce to the fullest capacity and subject to the control of the Government through its lawfully constituted agencies. No excuse for neglect, delay or interruption will or can be accepted by the Government. The administration desires and intends to pay fair and reasonable compensation, sufficient to maintain existing wage rates, salaries of officials and extensions necessary for war purposes. Up to the present time we have no reason to complain of the attitude and action of the Government, although we have been disappointed in some respects. It is up to us to prove our continued loyalty to the Government; but more than that, our loyalty to ourselves in the performance of duty. If there should be dissatisfaction concerning prices or the details relating to production or distribution of tonnage, production and deliveries must continue without interruption or diminution, leaving any question at issue to be settled at a later date. So long as the attitude of those in control of Governmental affairs towards producers remains as it is at present, it must be the effort, as it will be the pleasure, of every one of the latter to do his part unselfishly, whole-heartedly and assiduously.

If our country is defeated in the pending military conflict your property and business and mine will be of little value. We

will have retracted our national steps a century and a half. The wealth of the country would be seized and retained as prize money by other nations. We have been forced into the war and we are compelled to fight in defense of our persons, our property and our sacred honor. There is no escape. We are in the war to the end, however costly and bitter. No man, no country was ever engaged in a more righteous or a more compulsory defense. If we do not do everything practicable to uphold the hands of the President and to add to the success of the defense against the foreign aggressor we are less than men; we are weaklings; we are poltroons. I believed for a long time we could and would be kept out of the war, but there was no escape. It was forced upon us. The President delayed as long as he consistently could. We must now fight with every weapon within our reach. We must subscribe to the Liberty Loans. We must cheerfully pay our taxes, and, of still greater importance, we must furnish steel in larger and still greater quantities. If we succeed in this war, if we do our duty, life here will be worth living. Our country will occupy a place in the front rank of worthy nations. Democracy in its truest sense, one that means "a whole people, unified, with law for rich and poor, equal opportunities for all men" will be firmly established. A basis for preventing future prolonged wars will be secured. Our properties, our businesses will be more valuable than ever. Progress and prosperity will be in evidence on every hand. The war will have been a real, substantial benefit to the entire world. The moral strength and power of this country and other similar countries will be greater than ever before. If we believe the Allies can and will win the war, then we may be pronounced optimists for the long future.

On the battlefields of Europe men are dying by thousands and tens of thousands. Our sons or brothers or other relatives will soon be active participants. I fear the rolls of the dead or injured may be brought across the ocean within a few months, although I hope for the contrary. These men who have cheerfully offered their persons as a sacrifice to a noble cause are appealing to us by thought if not by word for such assistance as we may render. Every dollar we expend, everything we do, every sacrifice we make will assist in protecting the lives and health of the patriots who are abroad in defense of our rights. We must not, we cannot withhold anything that will be of benefit to those splendid men.

Steel Corporation's Earnings.

The Steel Corporation's earnings reports for the past three quarters have not been comparable, on their face, on account of the partial inclusion of allowances for the war tax on excess profits, and in these busy times few have been able to make the necessary computations and allowances to determine precisely what they indicate. An effort will here be made to arrive at an approximation in as simple a manner as possible. A summary of the reports as they appeared should first be made.

When the report was made for the first quarter there was no excess profits tax proposal even in crude form. The Corporation reported its total earnings, after deducting subsidiary company bond interest, at \$113,121,018.

The second quarter report showed \$90,579,204 after allowing \$53,918,872 for the excess profits tax, according to the House bill, which had reached the Senate July 3d. From the surplus that had been shown for the first quarter there was then allowed \$32,865,000 as an estimate of the war tax applicable to the first quarter, computed of course according to the House bill.

For the third quarter there was reported \$68,243,784, after an allowance of \$63,733,013 for the war tax, this being according to the bill as finally approved. Then there was deducted from the surplus that had been reported for the first six months the amount of \$12,716,724, an allowance for the increased tax as provided by the actual law over the allowances that had previously been made, based on the House bill.

What the trade is chiefly interested in, of course, is the total amount the Corporation earned, subject to taxation, rather than the amount that is left after allowance is made for the taxes. It is impossible to figure this precisely, for the reason that the revision made to cover the provisions of the actual law instead of the House bill is stated for the first six months as a total, instead of for the quarters separately. To arrive at an approxi-

ation, the obviously inexact method can be used of prorating the \$12,716,724 to the two quarters according to the tax originally allowed. This is sufficiently close for the purpose of arriving at the total profits by quarters, for comparison. The result is as follows:

	Total Profits.	Tax.	Remainder.
1st quar.	\$113,121,018	\$38,800,000	\$74,321,018
2d quar.	144,498,076	61,701,596	82,796,480
3d quar.	131,976,797	63,733,013	68,243,784

Total \$389,595,891 164,234,609 225,361,282

Of course it is well understood that the tax figures the Steel Corporation presents are purely an approximation. The Treasury Department is establishing three bodies, an excess profits advisory board, an advisory board of legal review and a division of business co-operation, all for the purpose of interpreting the law and distributing the information to the public. The Steel Corporation presents one of the most complex cases for applying the law and of course the amount of the tax will come up for review and the tax the Corporation eventually pays may be decidedly different, one way or the other, from the amount the corporation has allowed after a necessarily hasty interpretation of the law.

The decrease of \$12,500,000 in total profits from the second quarter to the third quarter surprised the trade, as it had been generally expected that there would be an increase. The tonnage shipments may have decreased slightly, and probably did, but the realized prices on commercial orders would naturally increase, owing to the continued working off of older and lower priced contracts. Even the large increase in the amount of Government steel made should not pull down earnings greatly for the reason that while Government orders were taken at prices very far below the existing market the divergence from prices realized on actual shipments in the second quarter would be small.

One cause of the decrease is to be found in the fact that a new description of allowance is noted for the third

quarter, and as this was not stated for the second quarter it probably was not made. This allowance in the third quarter, made before profits were reported, is described as "allowances for estimated proportion of extraordinary cost of facilities installed by reason of war requirements". In other words, equipment installed for filling war requirements, if they are not to be amortized very rapidly because perhaps useless after war, are at least to be amortized rapidly as to their extra cost as compared with the peace time cost. It is necessary to make the allowance before profits are ascertained, otherwise the Corporation would not get the full amount of the allowance, as it would be taxed.

Considering all the circumstances, there is good reason for assuming that the average profits per ton of the Steel Corporation were at least as large in the third quarter as they were in the second quarter, nor is there reason at this time to suppose that they will materially decrease in the near future.

The third quarter earnings, after allowance for the war tax, represent what has always been the poorest quarter of the year as to tonnage, yet they are at the rate of \$273,000,000 a year, comparing with the following: Poorest year in history, 1914, \$71,663,615; poorest year prior to war, 1904, \$73,176,522; best year prior to war, 1907, \$160,964,674; 1915, \$130,396,012; 1916, \$333,574,178.

The Pig Iron Differentials and Analyses.

Much later than had been expected, the differentials, analyses, etc., that are to obtain in pig iron transactions, in connection with the basis price of \$33 announced September 24th, have been promulgated.

The basis price of \$33 applies on No. 2 foundry iron and on basic iron. The price is the same for all districts. There was some sentiment in favor of making the base price different in different districts according to average differentials that had obtained in the past. There was no question that the basis price of \$33 was to apply to the valley furnaces. Over a period of years all of the other northern districts have shown slightly higher prices at furnace than the valley district, while Alabama has shown lower prices, at Birmingham, by fully \$3 a ton. It depended upon how a furnaceman appraised the future of the market whether he would prefer a higher or a lower price than that set for valley furnaces. Assuming for instance, that the traditional differential for eastern furnaces was 50 cents above valley, then if there were to be a strong market the eastern furnace would prefer a basis price of \$33.50, as it would be obtainable read-

ily. Assuming otherwise, he would presumably prefer a \$33 price, for the valley furnaces would be indisposed to sell at under their limit and the eastern furnace would have a slight advantage in the competition. The case of an eastern furnace is taken merely because some specific district must be mentioned.

The naming of \$33 as the maximum at Birmingham may result in some confusion. The Alabama furnaces have been disposed to quote this price, although it is not competitive in the north, on account of the freight. The price fixing authorities assume, no doubt, that eventually the Alabama furnaces will have to shade the price in order to compete. If that is not the correct view, then it would seem that the Alabama furnaces would be given a disproportionate profit, compared with other districts.

We have seen suggestions that the Alabama furnaces might sell to their local customers at \$33, Birmingham, and to northern customers at a lower furnace price. No such practice could possibly be countenanced. "One price for all" means one price upon all sales made by a given seller. It would

be inadmissible, furthermore, for the southern furnace to sell to a southern cast iron pipe foundry at \$33, Birmingham, and to a northern cast iron pipe foundry at a lower Birmingham price, because the southern pipe would have to pay the freight to northern points to compete with northern pipe, and this circumstance is usually equalized by the southern pipe foundry saving the freight on the pig iron.

It is an excellent thing, if it can be

made to work out smoothly in all respects, for the pig iron trade to be furnished a standard of analyses pertaining to the different grades. There has been considerable confusion in these matters in the past, for the trade has had only its common practice, and no official authority, to depend upon for its analyses. There is the prospect that the analyses will become so well established as to endure after the war.

Production and Consumption of Steel.

Thus far this year the production of pig iron has been at a rate slightly less than the average rate of 1916, while the production of steel has shown a slight increase. Both divergences are practically inconsequential. The productive capacity in both pig iron and steel is very materially greater than the average capacity available in 1916, by reason of new construction, but on account of shortage of coke the output is not correspondingly increased.

The output has been fairly uniform this year, and a striking fact is that October, usually a record month on account of weather conditions, has shown no substantial improvement over the summer rate of production.

Indications are that the operations of iron foundries have been materially lighter this year than last. With slightly less pig iron the steel works produce slightly more steel, and there is no reason to suppose that they have been having a greater supply of scrap. On the contrary, accumulations of scrap have been used up and industrial operations at present are of such a nature that the outcome of scrap, in proportion to iron and steel produced, is smaller than usual.

The consumption of steel for ordinary industrial purposes has obviously decreased. A much larger portion of the steel output than formerly is passing into war requirements and yet steel instead of becoming scarcer has been

growing less scarce. Jobbers and manufacturing consumers find less difficulty in securing shipments desired.

It is an outcome, partly of the fact that the rise in prices of pig iron and steel reached its culmination last June, with a slight receding tendency developing as early as July, and partly of the fact that Government price fixing has been started, that the market turnover is not an index to the prospective consumptive requirements. Buyers are uncertain what their requirements are going to be, and in any event the uncertainties caused by the possibilities of Government price revision and the priority to be given to war steel orders, with a secondary priority perhaps to be given to requirements not directly of war material, make both buyers and sellers unwilling to commit themselves as to forward business.

While production of steel is restricted to a level considerably below the capacity, it is still not far from 33,000,000 gross tons of finished rolled steel a year, or 10,000,000 tons in excess of the production in the two years before the war, easily the best years on record at the time. For 10,000,000 tons to be furnished the Government and its Allies, for war purposes, would represent a great measure of war activity, and yet it would leave the country with much more steel, for commercial use, than in 1912 or 1913, for in those years there

were exports of about 2,500,000 tons a year. It seems quite doubtful whether a program of building 6,000,000 tons of merchant shipping a year can be carried out, yet that would involve the consumption of only about 2,500,000 tons a year. That would leave it that the steel industry, operating at less than capacity, can supply domestic users with as much steel as in 1912 and 1913, can supply the steel for the full

shipbuilding program and still supply 10,000,000 tons for direct use. By as much as the commercial consumption of steel were reduced there would be more than 10,000,000 tons directly for the war, yet when it comes to converting any such tonnage into things for war use, whether war craft, motor trucks, railway material, shells, etc., a great manufacturing problem is presented.

Iron and Steel Scrap.

By W. Vernon Phillips of The Perry, Buxton, Doane Company, Philadelphia, Pa.

I have been asked to address you on a subject which Mr. Farrell tells me has never before been put before you, namely, Iron and Steel Scrap, and I feel very fortunate in having the opportunity to tread on virgin ground. The subject, however, is such a broad one that I can only touch upon certain features, but I hope it will leave the way open for further and more scientific discussions, which I am sure will be both interesting and helpful to both the producer and consumer.

For the present my purpose shall be to acquaint you with the great importance of this too lightly regarded business—we can not call it an industry, though it is fast approaching that stage.

Importance of the Business.

But first let me point out its importance as a business. For instance, it is second only to pig iron in point of tonnage. The total consumption of iron and steel scrap in the year 1916, over and above that made by the consumer, was in excess of 12,000,000 tons, exclusive of cast iron scrap and material used for chemical and other unusual purposes, also exclusive of the large tonnage of borings and turnings used on the blast furnaces, all of which would make an additional two to five million tons, but we are without figures, or the present opportunity to secure figures, on this tonnage; so we will confine our consideration for the present to the 12,114,000 tons consumed in 1916, which represents 9,646,617

tons of iron and steel scrap melted in open-hearth basic and acid furnaces including a small tonnage which was used in electric furnaces. Of the balance, approximately 2,000,000 tons was worked in rolling mills by the various methods employed, namely, bushing, puddling, piling and direct rolling into bar iron and soft steel, while over 600,000 tons was converted by mills rolling old rails down to lighter sections, to angles, to concrete bars and including axles, shafting, etc., rolled to steel bars.

During the present year the increased open-hearth capacity will probably have called for at least 2,000,000 tons more scrap than in 1916, in fact, due to the inability of pig iron to keep up with the demand, such enormous calls were made on the scrap business that prices were advanced nearly 100%. However, this had the desired effect and scrap was brought to the consumer from the remotest parts of the country and including many points out of the country, so that the price quickly receded with the satisfied demand.

As I said before, we have no means of accurately estimating the tonnage, but from the figures available, we can safely say that during 1917 there will be consumed over 15,000,000 tons of all grades of iron and steel scrap, valued at about \$100,000,000, in fact, many of you will be surprised to learn that there are single companies doing an annual business of over \$50,000,000

and a great many whose turnover exceeds \$10,000,000.

You will see by now that my prime object is to impress you with the importance of this business, for the simple reason that it has been so hopelessly misunderstood and it was not until the United States entered the war and began to take serious stock of itself that the subject was considered of sufficient importance to be recognized. As an illustration, when the Sub-committee on scrap was appointed in connection with the Council of Defense, one paper seriously remarked that even the humble scrap dealer was to be called on for help.

The Sources of Supply.

There is also an erroneous impression regarding the source of iron and steel scrap and it is likely that no half a dozen men in the industry would figure the same way, but it is the opinion of authoritative judges that 25% of all the iron and steel scrap is produced by the railroads, 40% by the industrial plants in the form of new crop ends, structural crops, ship plate, stampings, turnings and borings, the other 35% is shipped by scrap yards of which probably one-half consists of railroad and industrial scrap sent to the yards to be sheared and prepared, leaving 15% to 20% which is collected by the Junk dealers. But while the collection of old agricultural house and city scrap represents a comparatively small portion of the entire production, it is at the present time a most important part, as that is the only source which can be increased. The railroads are producing less, due to labor conditions; industrial plants can only produce scrap in proportion to the amount of the steel they receive; while all scrap which comes from replacements is smaller in volume, due to the great difficulty in replacing machinery or equipment of any kind. Besides, we are shipping millions and millions of tons of our steel out of the country, from which we are getting no scrap and will get no scrap; and, in addition, the trade is being called upon to ship thousands of tons of scrap itself. Italy, in particular, has been starving for steel scrap, and there has already been

shipped out over half a million tons. The Government has taken a hand in this, as it will in many ways, to regulate this business during the war; but if the war keeps up long we shall soon reach a point where iron and steel scrap will become a vital matter, and I want to use this opportunity to impress all of you with the importance of regarding this subject seriously.

The Need of the Dealer in Scrap.

You are all either consumers or producers of scrap. There are millions of producers and hundreds of consumers who are served by thousands of dealers who are in turn served. The hundreds have always used this great advantage to discourage and discredit the thousands by the very simple and though probably innocent expedient of buying something they want but something the dealer cannot always deliver. This is at the root of all the so-called dishonesty in the scrap business. In normal time the competition is very severe and the scrap dealers go beyond their own powers in their efforts to please the buyer.

Scrap is not produced; it is a by-product or a discard of something and it can rarely conform to specifications calling for strict sizes, weights, shapes and characters, especially under existing circumstances, when the stock piles of the country have been depleted, with labor scarce and unwilling, and with shipping facilities so limited.

The greatest good a buyer can do is to buy what the dealer or producer has to sell, rather than to buy something which he had to try to get out and get.

Scrap has no value without a demand. For instance, when I was in the tin plate manufacturing business about 20 years ago, we were always at a loss to know what to do with our tin plate clippings or what is known as tin snap, and we paid money to have it hauled to the dump. Within a few years, Dr. Goldschmidt discovered a method of detinning, producing chloride of tin and oxide of tin and removing 97% of the metal, leaving the residue of steel sufficiently free from tin to be used in the open-hearth furnace, the black sheet trimmings left being hydraulically compressed. The detin-

ning business has greatly expanded; tin scrap became a commodity and ever since has had a market value.

The Value of Scrap.

The value of iron and steel scrap is in exact proportion to the value of material it replaces. Thus U. S. steel scrap is based on basic pig iron and over the last 15 years has sold at approximately 10% less than the delivered price of pig iron at Pittsburgh. In all other sections the percentage below pig iron has been greater, due to the increased cost of delivering pig iron and the fact that Pittsburgh is usually the highest market for steel scrap, it being the largest consumer and a relatively smaller producer. All other grades of steel scrap down to light turnings are worth their relative value to No. 1 steel scrap; but scrap does not always bring its intrinsic value as it is entirely based on supply and demand. Steel scrap has frequently sold above basic pig iron, though not in the last few years, and there has usually been sufficient scrap to keep it well below its parity. Thus we come back to the same point that scrap is worth only the price that it will bring. It has no manufacturing cost basis.

Helping the Government

The larger dealers in the iron and steel scrap business met immediately after the declaration of war and formed an association known as the American Board of Scrap Iron Dealers, for the sole and specific purpose of furnishing the Government with help and information. Up to the present time the sub-committee of the American Iron and Steel Institute has been co-operating with the various governmental boards and commissions; but now that the plans are to be put into actual operation, the American Board of Scrap Iron Dealers is about to take up the work of establishing and maintaining bureaus for the purpose of assisting in that most serious of questions, transportation, working in harmony with the American Railway Association, and also for the purpose of eliminating in so far as possible the question of rejection, and I speak for them in asking the heartiest co-operation of all the consumers. Do not re-

ject unless you have to. Do not reject for technicalities. Do not reject because the price has declined, but when you find what is known as a doctored car (for the information of the uninitiated, a doctored car contains good scrap on top and poor scrap underneath) do not take it under any circumstances, and if possible, do not let anybody else take it; have it returned to the shipper and report him to the bureau. There are men in the business who give it a bad name and this is a good time to get rid of all bad men.

Some Interesting Features of the Scrap Business.

I have been talking in a purely elementary manner. I have not touched on the grades, classes and specifications nor on the peculiar nature of this most interesting business. It is unlike any other large business. The competition is to buy not to sell. There are a hundred different kinds of iron and steel scrap, and possibly a hundred different users. It is the business of a scrap dealer to know what each mill uses and wants and what each producer makes. People often ask why the seller does not buy back the scrap from his own steel; but only in rare cases can he use it in the form it is made, and even then some other user needs it more than he does and is willing to pay a higher price. There is a use for every kind of scrap made; and while economists are making this wonderful discovery, it has long been known to the scrap dealer and there is no such thing as waste to-day.

The successful scrap dealer must not only know his own business but that of each of his consumers, and the better he is informed the better he can serve them. He has yards all over the country to-day that are really manufacturing plants representing millions of dollars of investment in land, buildings, shears, drops, cranes, presses, locomotive, magnets, etc., many of these yards representing an outlay of several hundred thousand dollars each. These yards are steadily growing and they will soon be supplying 50% of the scrap requirements of the country. The old idea of storing scrap and selling on a high market has disappeared, at least

for the present. The unprepared scrap comes in at one end, so to speak, goes through its various operations and goes out the other end prepared and ready for the charging box, rolling mill or foundry, as the case may be.

I fear I have tired many of you, but the subject is such an endless one that I fear it must wait for a future time when it may be discussed under its various headings. I would like to tell of the wonderful, yet unorganized, system by which this great volume of material reaches its markets, of the methods of

financing in which many dealers virtually act as bankers, of the short selling and long buying and of many amusing incidents in connection with the ignorant, small dealer's efforts to market his material, also of the methods employed in the scrap business abroad, particularly in England, and Germany, where scrap has become of such prime importance as a result of the war, but I fear that I have already over-stepped my privilege and must thank you for the interest you have shown in this rather general description.

Review of the Secondary Metals Industry in 1916.

By J. P. Dunlop, of the United States Geological Survey.

Dealers in and refiners and smelters of waste metals did a large and profitable business in 1916. Stocks of many new metals were small, and spot shipments frequently were not available. The scarcity and the high prices demanded for new pig metals stimulated the sale of scrap metal. Frequently higher prices were paid for prompt shipments of scrap metals than were obtained for new metals sold under contract. There was also a large increase in the sale of guaranteed composition ingots made from scrap.

The value of the secondary metals, exclusive of gold, silver, platinum, iron, steel, and ferro alloys, recovered in the United States increased from \$114,304,930 in 1915 to \$265,377,856 in 1916. The increase was partly due to larger use and partly to much higher average prices.

The value of the secondary platinum, iridium and palladium recovered in 1916 amounted to about \$4,000,000, and the value of old jewelry, dental waste, silver spoons, ornaments, and other material containing gold or silver, remelted and refined, was probably more than \$20,000,000. It is difficult to estimate the value of ferrous scrap melted in 1916. Some of the scrap ferrous metal contained nickel, tungsten, manganese, or other alloys, which made it many

times more valuable than the more ordinary commercial products. Old rails, car wheels, pipe, and other iron and steel shapes, were often sold at prices in excess of the original cost. Iron and steel scrap is used by all foundries and rolling mills, and hundreds of thousands of tons are collected, sorted and shipped. Prices for iron and steel scrap have increased to record figures. The value of all other waste materials has increased so greatly that the total value of waste metals and other junk was 100% more in 1916 than in 1915.

It is impracticable and unnecessary to segregate the statistics relating to the melting, refining, and using of secondary metals according to States, but more than 90% of the refining and smelting of drosses and scrap metals in the United States is confined to the territory East of St. Louis and North of Ohio River.

About 43% of the secondary aluminum was reported from the States of Ohio and Michigan, 27% from Illinois and Wisconsin, and 18% from New York, New Jersey, and Massachusetts.

Smelters and refineries in St. Louis and Chicago recovered about 37% of the antimony in alloys, and those in New York and Philadelphia about 45%. The largest recoveries from tin dross, tin scruff, and clean tin scrap were

SECONDARY METALS RECOVERED

Secondary Metals Recovered in the United States in 1915 and 1916.

	1915		1916	
	Quantity. (short tons).	Value.	Quantity. (short tons).	Value.
Secondary copper, including that in alloys other than brass	99,937	\$33,498,882	140,000	\$68,880,000
Remelted brass	137,500	40,788,000	300,000	127,440,000
Secondary lead	36,400		56,700	
Recovered lead in alloys	42,500	7,416,600	39,600	13,289,400
Secondary spelter	52,900		50,700	
Recovered zinc in alloys other than brass	5,300	14,433,600	2,600	14,284,400
Secondary tin	3,250		7,600	
Recovered tin in alloys	8,400	10,554,180	9,800	15,131,040
Secondary antimony	2		80	
Recovered antimony in alloys	3,100	1,811,568	4,400	2,270,016
Secondary aluminum	5,700		12,900	
Recovered aluminum in alloys	2,800	5,802,100	6,400	23,430,200
Secondary nickel (a)			16	
Recovered nickel in alloys			800	652,800
		114,304,930		265,377,856

(a) Recoveries made by International Nickel Company from scrap nickel or alloys and from nickel in scrap ferrous alloys from any source are not included.

made in Pennsylvania, New York, and New Jersey. Nearly all the secondary nickel was reported from Connecticut. The recoveries of lead, zinc, brass, and copper, and of such alloys as babbitt, bronze, and pewter, were more generally distributed. The greatest number of the larger smelters or refiners of secondary metals are located at or near New York, Philadelphia, Chicago, Pittsburgh, St. Louis, Detroit, Cincinnati, Cleveland, San Francisco, and Tottenville, N. Y., though there are many large and small plants at other places.

Secondary Copper.

The total quantity of secondary copper recovered in 1916, on the assumption that the brass remelted had an average copper content of 70%, was 350,000 tons, of which 52,212 tons (22,425 tons more than in 1915) was recovered by plants refining primary metals and the remainder by plants treating only secondary materials. The copper produced by smelters of the latter class includes 74,100 tons of pig copper, 14,000 tons of copper in alloys other than brass, and 210,000 tons of copper in remelted brass. These figures indicate an increase for 1916 of about 20,000 tons of pig copper, 113,750 tons of copper in brass, and a decrease of about 2,000 tons in alloys other than brass. At least 175,000 tons was recovered from clean

scrap made in the course of manufacture of copper and brass ware, so that less than 175,000 tons was obtained from ashes, cinders, and scrap, or from material that had actually been used and discarded. From the reports received it is quite evident that there was an increase in the quantity of old scrap brass and copper smelted and that there was a very much larger proportionate increase in the quantity of clean new scrap remelted. The reports from rolling mills, ammunition factories and other users of brass show enormous increases in the quantity of clean scrap remelted. The increase in the quantity of scrap brass used amounted to 162,000 tons, and of this increase at least 100,000 tons was clean new punchings, filings, and clippings. The decrease shown in the quantity of secondary copper in alloys other than brass was undoubtedly due to including alloys containing tin which properly should be termed bronze under classification "brass."

The value of the copper, both as metal and in alloys, is computed at the average yearly price of 24.6 cents, the average sales price of all marketable grades of new metal.

According to the Bureau of Foreign and Domestic Commerce, the exports for the calendar year 1916 of scrap brass, fit only for re-manufacture, were 3,478 tons and the imports of copper

and brass scrap were 22,982 tons. Many railways sell or turn in the larger portion of their brass and copper scrap and other metal waste to dealers in part payment for new material, but the reports received show that the railways utilized in their own shops and foundries more than 14,000 tons of brass, in addition to 950 tons of copper and 3,000 tons of copper in alloys other than brass.

The production of copper from secondary sources in 1916 was equal to about 31% of the refinery output of primary copper in the United States from all sources, or about 37% of the primary copper smelted from domestic ore.

Secondary Lead.

The secondary lead recovered in 1916 amounted to 96,300 tons, or about 17,400 tons more than in 1915. The secondary lead recovered as pig lead increased about 20,300 tons, though the recovery of secondary pig lead made by those smelters whose product is mainly primary metal was only 3,129 tons more in 1916 than it was in 1915. A large portion of the recovered lead in alloys was derived from old babbitt, solder, type metals, and white metal drosses. The main sources of secondary pig lead are old pipe, lead cable, battery lead, and lead lining of acid tanks. Regular smelters reported the recovery of 14,694 tons of lead from scrap lead and scrap antimonial lead.

The quantity of scrap antimonial lead remelted by regular smelters was nearly 48% more than that reported in 1915.

The total output of secondary lead was equal to 16.8% of the refined primary produced in the United States in 1916, compared with 14.3% in 1915. It was exceeded by the primary domestic lead output of only three States—Missouri, Idaho, and Utah—and was more than the combined quantity of primary lead derived from the ores smelted from all other States.

Secondary Zinc.

The output of secondary zinc (including that in brass) amounted to 115,000 tons and equalled 16% of the production of primary spelter in the United States in 1916, compared with 19% in

1915. The recovery was about 22,500 tons more than in 1915, all of which increase was owing to the increased quantity of zinc recovered in brass, for the recovery from zinc dross and skimmings was less in 1916 than in 1915.

Two smelters in New Jersey, two in New York, and one each in California and Pennsylvania, which treat only zinc drosses and skimmings, use large graphite retorts of 600 to 800 pounds capacity instead of the small clay retorts used by smelters treating ore or mixed ore and drosses. The many uses of zinc drosses and skimmings create active competition for their purchase. Considerable zinc is recovered by sweating, and the residues are sold for redistillation. Secondary spelter varies in quality just as the spelter derived from ore does, but a part of the secondary spelter is reported to be of excellent quality.

The production of spelter from drosses and skimmings made by those zinc smelters which do not treat any ore was 2,800 tons less in 1916 than in 1915. This decrease was partly due to the redistillation of the low grades of spelter in order to meet the demand for spelter suitable for brass used in making war munitions. The main reason, however, was that there was a decrease of about 97,000 tons in the quantity of galvanized sheets, pipes and forms produced, so that less zinc dross was shipped by galvanizing plants.

The zinc recovered in alloys other than brass amounted to 2,600 tons, compared with 5,300 tons in 1915. Of the 50,700 tons of secondary zinc recovered as spelter 29,663 tons were obtained by redistillation from drosses and skimmings and from scrap zinc treated by the electrolytic process. Of this quantity 16,196 tons were obtained by smelters whose principal source of zinc is ore. This was about 1,300 tons more than the recovery from drosses and skimmings in 1915. In addition to the 50,700 tons of remelted and redistilled spelter it is estimated that at least 15,000 tons of zinc chloride was made, and likewise about 51,291 tons (marketed production) of the zinc pigment lithopone (containing approximately 32%

zinc sulphide and oxide). The zinc used in both of the last-named products is derived almost altogether from zinc drosses and skimmings. The exports of zinc drosses, which amounted to 2,526 tons in 1914 and to 3,668 tons in 1915, decreased to 48 tons in 1916.

Secondary Antimony.

The production of secondary antimony, of which all but 80 tons was recovered in alloys, increased from 3,102 short tons in 1915 to 4,480 tons in 1916. The value assigned is arbitrary and is based on the average yearly price for ordinary brands of antimony published by the American Metal Market. The regular smelters reported the recovery of 528 tons of antimony contained in antimonial lead scrap, an increase of 52 tons. The principal materials refined or remelted which contained antimony as an alloy were hard lead drosses, babbitt, solder, pewter, and type metal. The imports in 1916 of antimony as metal in ore or as oxide or salts amounted to 11,928 tons, and the recovery from secondary sources was equal to 38% of the imports. The production of antimony from antimony and antimonial lead ores of domestic origin in 1916 was about 4,500 tons, or about the same quantity as that recovered from secondary sources.

Secondary Tin.

Although the United States consumes nearly 50% of the world's production of tin, apparently there were no domestic tin ores smelted in the United States in 1916, though some tin concentrates, containing about 140 tons of metallic tin, were shipped from Nome, Alaska, to Singapore, Federated Malay States, for treatment. A new tin smelter having a capacity of 18,000 tons a year was put in operation in March, 1916, by the American Smelting & Refining Company, in New Jersey, and tin concentrates from Bolivia were imported and smelted.

Another tin smelter is to be built on Long Island by the Williams-Harvey Corporation, which will also use Bolivian ores.

The secondary tin recovered in 1916 was equal to about 24% of the tin imported, as metal or as oxide, into the United States during the year (69,055

short tons). Secondary tin recoveries increased from 13,650 tons, valued at \$10,554,180, in 1915, to 17,400 tons valued at \$15,131,040, in 1916. The quantity recovered as tin was 7,600 tons and that in alloys and chemical compounds 9,800 tons. The value of the recovered tin here assigned is arbitrary and is based on the yearly average price for new metal given by the American Metal Market. The secondary tin in alloys increased about 1,400 tons and the secondary pig tin about 2,350 tons.

Nearly all clean tin plate scrap is determined by one of three processes—the electrolytic alkali, the chlorine or the alkali salt-peter.*

By the first method the tin is recovered in the form of a spongy granulated precipitate which can be remelted into pig tin; by the second process tetrachloride of tin is recovered for use in silk dyeing and weighting; and by the third process the tin is recovered as an oxide which is either used as coloring in the enamel industry or is smelted into pig tin by means of a reverberatory furnace.

The recovered tin in alloys includes the tin content of products made in several plants from clean tin plate scrap and a small quantity of old tin cans. This included some tin oxide and putty powder but consisted mainly of tin chloride. The production of these compounds is calculated as metal and not separately stated in order to avoid disclosing confidential information. As the products are made from scrap tin and thus conserve the primary metal, they are properly regarded as recovered tin.

The largest recoveries of tin were made from scruff and drosses that occur in making tin plate andterne plate, and amounted to more than 4,850 tons. The quantity of tin plate made in 1916 was about 200,000 tons more than in 1915, and the quantity of tin recovered from scruff and drosses increased more than 1,000 tons.

About 2,600 tons of tin were recovered from clean scrap tin plate, either as pig or as tin chloride or tin oxide. Apparently only about 750 tons of pig

* A short history of the detinning industry; Met. and Chem. Eng., August, 1917, pp. 187-189.

tin were recovered from scrap tin (not tin plate) clippings, old tin pipe, and tin foil, and it is impossible to give the separate quantities of tin recovered from these sources.

Only one plant reported using solely old tin containers, from which the tin coating and solder were first sweated and the black plate was then remelted to make sash weights. The tin scrap and old tin cans are used in the western mining regions for their iron content for the precipitation of copper from mine waters.

An increased quantity of tin was recovered in bronze, and a considerable part of the brass remelted contains a small quantity of tin and of lead. Other alloys from which secondary tin was recovered were solder, babbitt, pewter,terne metal, and electrotype metal.

J. H. Hall, managing director of the Monometer Manufacturing Company, of Aston, Birmingham, England has invented a machine for recovering tin and solder from old cans and scrap. It consists of an inclined cylinder which rotates within an outer cylinder lined with firebrick. The inner cylinder has at its higher end a feed aperture which once in every revolution registers with a stationary hopper, through which the tins to be treated are fed in. It is heated by a series of gas or oil burners so arranged that the temperature gradually increases from the upper to the lower or outlet end.

The cans fed in by the hopper slowly gravitate down the heating chamber as it rotates, until finally they are discharged by chute, while the molten tin and solder are collected by channels formed in the interior of the chamber, and pass out by a second smaller chute. The machine is thus continuous in operation.

It is not probable that any appreciable quantity of old tin cans has been treated in Great Britain and the recovery of tin from such sources in 1916 was small.

The high prices now prevailing in the United States for pig tin and also for steel scrap have resulted in a number of inquiries to the Geological Survey as to whether old tin plated food containers could be profitably treated. The Survey has not been able to assure

would-be investors that such an undertaking would be profitable. The coating of tin on the steel sheet is thin and usually the tins are partly rusted and retain some of the food contents. The treatment of such containers would result in the recovery of considerably less than 1% of the weight of the cans in low-grade tin. The scrap sheet steel refuse can not be freed from all the tin and solder. The scrap is thin and light, which necessitates handling a large volume of material to get car shipments, and aside from the undesirable alloys of tin and lead the losses in melting such scrap are large. The only purchasers of this kind of steel scrap are the manufacturers of sash weights; occasionally there is a demand from foundries that have orders for very rough castings, in which a portion of burned steel cans can be mixed with cast-iron scrap. The market in all cases is very limited, and notwithstanding the very high prices of desirable grades of scrap iron and steel the old scrap cans would probably not be worth more than \$6 to \$8 a ton delivered to the consumer.

The general opinion of waste metal dealers is that the secondary recoveries of tin will not materially increase. There can be and probably will be some saving effected by using less tin in alloys, such as babbitt, brass, and bronze and by the return and reuse of large cans supplied to domestic buyers of petroleum products; but any large saving of tin must be effected by marketing many commodities in containers not requiring the use of tin plate. Tin boxes or tin foil make the best packages for tobacco, cigarettes, candies, and many other articles; but tobacco can be packed for domestic use in paper or fabric containers; tooth powder can be sold in paper boxes; and liquid dentifrices and many other druggists' supplies can be sold in porcelain or glass jars instead of in collapsible tubes. William Crawford Hirsch, editor of the Waste Trade Journal, states that one of the largest candy factories in the United States, which formerly sold 50% of its output in tin boxes, is now using waxed paper and paper boxes for its products.

Secondary Aluminum.

The recovery of secondary aluminum as pig aluminum or in alloys in 1916 amounted to 19,300 tons, valued at \$23,430,200, as compared with 8,500 tons, valued at \$5,802,100, in 1915. The quantity recovered in alloys amounted to 6,400 tons.

The increase in quantity of secondary aluminum in 1916 was partly due to the material increase of castings used

in automobiles. The high prices prevailing also no doubt resulted in considerable aluminum wire being remelted.

Various products are made by smelters and refiners from scrap aluminum. One sample of pig aluminum which was made from clean sheet aluminum clippings showed the following analysis:

(See next page.)

MINERAL PRODUCTS OF THE UNITED STATES FOR 1915 AND 1916.

(Compiled by Miss Martha B. Clark, under direction of H. D. McCaskey, of the U. S. Geological Survey subject to final revision.)

Product. Metallic.	1915.		1916.	
	Quantity.	Value.	Quantity.	Value
Aluminum	pounds	\$ 16,280,000	.....	\$ 33,900,000
Antimonial lead ..	short tons	23,224	24,038	4,463,582
Antimony	short tons	5,364	(b)	(b)
Bauxite	long tons	297,041	425,100	2,296,400
Cadmium	pounds	91,415	135,212	205,433
Chromic iron ore ..	long tons	3,281	47,035	726,243
Copper, value at New York				
City	pounds	1,388,009,527	1,927,850,548	474,288,000
Ferro alloys	long tons	388,644	589,738	50,281,692
Gold	troy ounces	4,887,604	4,479,056	92,590,300
Iron:				
Ore	long tons	55,493,100	77,870,553	1,181,902,277
Pig	long tons	30,384,486	39,126,324	663,478,118
Lead (refined) value at New				
York City	short tons	507,026	552,228	76,207,000
Manganese ore	long tons	8,708	26,997	627,417
Manganiferous ore, long tons		196,640	548,803	2,005,491
Nickel, value at New York				
City	short tons	822	918	671,192
Platinum and allied metals,				
value at New York City				
.....	troy ounces	8,665	28,088	2,301,762
Quicksilver, value at San				
Francisco flasks (75 lbs. net)		21,033	29,932	2,576,547
Silver	troy ounces	74,961,075	74,414,802	48,953,000
Tin (metallic equivalent), lbs.		204,000	278,000	(d)
Titanium ore (rutile) short tons		250	(d)	(d)
Tungsten ore (60% concen-				
trates)	short tons	2,332	5,200	(d)
Uranium and vanadium min-				
erals	short tons	692,750		(d)
Zinc, sales value ..	short tons	458,135	562,451	151,005,000
Total value of metallic				
products		991,751,929		1,621,832,177
Total value of non-met-				
allic products		1,398,565,121		1,878,507,232
Metallic and non-met-				
allic (estimate)		7,018,000		15,000,000
Total value of mineral				
products		\$2,397,335,050		\$3,515,339,409

a Excluded from metallic totals, as the value of the antimony contained in antimonial lead is included in the antimonial lead value and the remainder under "Unspecified."

b Figures not yet available. Estimate of value included under "Unspecified."

c Not included in total value.

d Figures not yet available. Estimate of value included in metallic total.

Analysis of Secondary Aluminum.

Aluminum	98.75
Copper .....	.16
Silica .....	.11
Iron .....	.56
Manganese .....	.42

100 00

The standard No. 12 alloy is the best known and most widely used of aluminum casting alloys. It contains a minimum of 92% aluminum and from 7 to 8% copper. Another alloy made by a large secondary aluminum smelter contains 4% zinc, 8% copper, and the remainder aluminum. Some of the reasons for defective aluminum castings are given by L. M. Brile.*

Aluminum chips from castings used in the manufacture of automobiles have become a large source of secondary aluminum. By the old methods of treatment the loss in remelting such chips was sometimes as much as 40%. A publication issued by the United States Bureau of Mines gives an account of experiments which resulted in reducing such losses to as little as 10%.

Secondary Nickel.

For the first time an effort was made in 1916 to ascertain the quantity of secondary nickel recovered as nickel or in alloys. The reports received showed

* Metal Industry, Feb. 1916, pp. 86-87.

that 816 tons of nickel were recovered, a considerable part of which was from clean new scrap. This does not include nickel in scrap ferrous alloys nor the recoveries from secondary sources made by the International Nickel Company. The scrap remelted by the International Nickel Company is included with matte and ore, and no separate recovery is attempted. The quantity of nickel in matte and in ore imported into the United States in 1916 was 72,611,492 pounds, most of which was from the Sudbury district, in Ontario. No direct production of nickel from American nickel ores is known to have been made in the United States in recent years, but an equivalent of 918 short tons of nickel was saved in 1916 as a by-product in the electrolytic refining of copper.

As the greatest use for nickel is as an alloy in steel, and the secondary recoveries of nickel reported to the survey in 1916 were solely from non-ferrous scrap, it is evident that the 816 tons of nickel reported form a small portion only of the nickel in alloys recovered and reused. The secondary nickel reported in 1916 was nearly all recovered from old nickel anodes, German silver, and monel metal. Analyses of various nickel alloys have been published by the United States Geological Survey.

Steel Plants.

XXIV. The Liberty Mill.

The Liberty Mill is a 110-inch sheared plate mill at the Homestead Steel Works of the Carnegie Steel Company. It was built in record time, for such a mill, and undoubtedly at record high cost as well. Its function is to increase the supply of steel plates for shipbuilding and it is rated to do this to the extent of 15,000 tons a month. If such an output can be attained the result will be very important, seeing that the whole country's production of sheared plates ¼-inch and heavier in 1916 was only about 1,800,000 tons, and not all of this tonnage was suitable for shipbuilding. The Liberty Mill, however, is only one

of quite a number of plate mills recently completed or near completion, for the purpose of making ship plates. The total capacity of all this new construction is probably in the neighborhood of 100,000 tons a month. The new construction is by interests that have already been producing plates and by new interests also.

The Steel Corporation management authorized the erection of the Liberty Mill on April 17, 1917, and precisely six months later President James A. Farrell pressed a button, putting the mill in operation. There was a parade and indeed quite a celebration, and

fittingly so as the townspeople had shown much interest in the construction of the new mill. Clerks and men in various occupations worked on the mill in spare time in order to hasten its completion.

The mill is a 110-inch three-high plate mill, with rolls 36 inches diameter, driven by a 2500 h.p. General Electric motor. The mill proper was built jointly by the Carnegie Steel Company and two foundry and machine companies, while other companies furnished shears and other equipment. As the mill is an emergency one it must operate on slabs obtained from various sources, the Duquesne and other plants of the Corporation and heating facilities for the entire tonnage to be rolled had to be provided, there being eight regenerative heating furnaces.

When prices for bars, shapes and plates were set by agreement between the Government and the steel producers the schedule was 2.90c for bars, 3.00c for shapes and 3.25c for plates. In a period of years shapes and plates have sold at about \$2 a ton higher than bars, but plates have averaged a shade be-

low shapes. The setting of a spread of \$5 a ton between shapes and plates is interpreted as a recognition of the fact that to provide the very large tonnage of plates required for prosecuting the war mills have to be built at exceptionally high costs, although eventually they will be worth no more than other mills if indeed they do not prove altogether superfluous. Thus the whole cost, or at least the extra cost, needs to be amortized in particularly short time, and an extra price for plates is properly provided for this purpose.

In arriving at its profits for the third quarter of the year the Steel Corporation took particular cognizance of the principle that the war steel requirements involve the providing, at exceptional cost, of various facilities and the extra cost should be amortized during the period of the emergency. Accordingly before arriving at total profits the Steel Corporation deducted, besides the ordinary cost of operation, with upkeep and repairs, "allowances for estimated proportion of extraordinary cost of facilities installed by reason of war requirements".

Topical Talks on Iron.

LV. Iron and Industrial Progress.

The iron industry has a habit of considering itself in the vanguard of progress of the human race and it often indulges in reflections of how it contributes to the world's advancement. So it does, but in reality it has been a backward industry rather than a forward one. It is only in very recent decades that it has amounted to much, and yet as a matter of fact the world was ready for it long ago. Without the steam engine iron would be much less useful than it is, for it requires power to work it up, but the steam engine was invented—and patented—about a century and a half ago. The steamboat came more than a century ago and the steam railroad nearly a century ago. If there had been iron and steel available, as at present, in those earlier times, it would have been used. One of the great things in in-

dustrial progress was the development of the factory system, and that came long ago. With such long range comparisons it rather looks as if the iron and steel industry had for a long time trailed behind the times, and when it finally was able to take its place such a demand had backed up for its product that the output naturally increased rapidly from year to year.

From the viewpoint of the industry to-day iron is a very recent thing. Generally speaking, the production of pig iron in the United States in a given period of ten consecutive years has been about equal to the entire production in the country's history preceding, which of course means that from the viewpoint of any one time the industry of two or three decades earlier was simply insignificant.

The increase in the production of

steel has been even more rapid than the increase in the production of pig iron, but that is not particularly important, for steel tended to supplant wrought iron and it also tended to supplant cast iron. This latter process is still going on, as the increase in the production of iron castings is not nearly as great as the increase in the production of steel castings and rolled steel.

While the production of pig iron dates from far back and the inception of wrought iron manufacture is so ancient that there is no definite date set, the steel industry of to-day is a very modern affair indeed. While the invention of the Bessemer and open-hearth processes of steel making date back some 60 years or more, the commercial industry of making soft steel has had the leading roll for only a trifle more than a quarter century. It was in the year 1892 that the puddling process began to experience a decline, for that year was the first which ended with fewer puddling furnaces in existence than at the beginning. Thus there are many men actively engaged in business who have lived through the really important commercial life of the

soft steel industry. The observation, of course, applies only to ordinary steel, formerly nearly always called "soft steel" or "mild steel" chiefly to distinguish it from rail steel and tool steel or steel capable of taking a temper. Tool steel is of very ancient origin, but has always been produced in relatively limited tonnages. The first employment of the Bessemer converter and indeed almost its sole employment for a long time, was in the manufacture of rails. Rail steel came into vogue in the United States late in the eighteen sixties, soft steel coming into general use in the eighteen nineties.

The world's actual progress in industrial lines may be measured more or less by its consumption of iron and steel but it is not a correct view that the material was offered and urged upon the public for its adoption. The case was quite the contrary. The world was ready for iron and steel before it was freely offered, and fabulous profits, for the times, were made by the early producers of pig iron and wrought iron. If they had been forcing their wares upon an unwilling public their profits would not have been large.

Patriotism.

Years ago in one of Charles Reade's works I found the suggestion that "patriotism is not love of country", without any explanation or defense, which was just like Charles Reade. For several days I wondered now and then precisely what he meant. It was not what the copy books had suggested to us when we were learning to write. Soon I forgot all about it for we were not thinking or talking patriotism in those days.

Lately there has been occasion for reflection. Some men we consider very patriotic, others less so, others quite unpatriotic. In these days we are judging by mens' actions and desires, not by their talk, and it is patriotism from the viewpoint of actions and aspirations that alone need be considered.

Is patriotism a trait of human character, of the mental and physical make-

up? If one is very musical, for instance, he does not indulge the trait just by singing when in church, or by attending musical performances. Perhaps he hums or whistles on every occasion. He thinks music. One does not think patriotism year after year.

If patriotism is love of country, what is country? It is not the hills and valleys, the lakes and woods. They present the same aspect to the senses, to whatever government they owe allegiance. Country is not the government, or we are most unpatriotic when we vote the opposition ticket, as majorities have often done in this one generation. Assume, though, that "country" can be so defined that the love of it could be an abstract virtue. Would those who loved it most serve it best in time of war? The question answers itself.

Patriotism is not a dissociate virtue.

It is purely a manifestation, through inspiration and action, of certain virtues.

Those virtues are three, intelligence, vision and unselfishness. They produce in a man the results we recognize as patriotism.

Intelligence and vision are separable. A chess player sees he is beaten. Intelligence. He knows he is going to be beaten. Vision. The ability to understand what is before one is intelligence. The ability to reason out what will come, through a long chain of alternating cause and effect, is vision.

When one's country is at war intelligence tells a man his country may need him. Vision tells him it surely will, and the sooner he begins rendering service the less he will have to regret afterwards. Unselfishness makes him offer his services eagerly.

What is patriotism these days but the willingness to do team work with the nation? The willingness to do team work, in any walk of life, in any circumstances, is not a separate virtue, it is simply the product of intelligence, vision and unselfishness.

Think of a man as unpatriotic if you will, but think farther. He lacks intelligence or vision, or he is selfish. There is a practical bearing to these remarks. It has been common observation of late that some groups of men have been more "patriotic" than others, and one wonders why the members of a given group of men, drawn from various quarters, should chance to be more patriotic than others. Some men have even expressed surprise that our Congress should prove so "patriotic"! Congressmen are fairly intelligent. They certainly have vision, as a rule, or they would not have aspired to become Con-

gressmen, and it is very rarely that any one who cannot do team work is ever elected to anything. In ordinary times Congressmen do team work or they do not, according to the nature of the time. It is part of the game. When they do not do team work it is not because they cannot.

In industries differences have been noticed. The reader can supply the concrete examples. Could one industry infuse the virtue of "patriotism" and another not do so? There are differences in industries. Some industries are humdrum affairs. They require chiefly willingness to work hard and long coupled with self-denial, or selfishness. Others require intelligence and vision. The one who is not intelligent does not get in at all, perhaps, or from the start he fails to make good. Or it may be an industry subject to great changes, from the adoption of new methods and devices. Its history may be a perfect kaleidoscope. The men who have not vision do not stay in it. The march of events soon puts them out for they did not see and provide. At any one time the percentage of men in that industry who lack vision is small. They are in for but a short time or they occupy a very minor place. The groups of men these days who exhibit "patriotism" are men whom the possession of intelligence and vision has brought together. Perhaps some industries make men more selfish than other industries, but where there is intelligence, selfishness usually has no great place.

So, if a man without foreign affiliations is "unpatriotic" simply set it down that he is ignorant or selfish, or both.

B. E. V. LUTY.

The Iron and Steel Situation.

Price Fixing Completed.

The first batch of iron and steel prices, set by Washington, was announced September 24th, the second, October 11th and the third November 5th. The various basis prices are set forth in detail on a preceding page, with the dates when announced. They cover, by implication, practically the entire line of products of the iron and steel producing industry.

The system adopted is that of prescribing maximum levels precisely, and leaving the industries involved to regulate themselves, as to details. The program contemplates a minimum red tape on the part of Washington, but everything that is done is to be scrutinized closely by the War Industries Board so that any prices or practices that are not in line with the general program may be taken up and dealt with as circumstances suggest.

The control is accepted voluntarily by the producers, and with considerable enthusiasm. It is regarded as a matter of patriotism that the full spirit as well as the letter of the program be carried out, and the iron and steel industry is full of patriotism.

It is well, however, to be frank and point out that virtue is not without its own reward in this case. The iron and steel market had become an impossible one, and at some time or other it was going to break. Some slight declines had already occurred before price fixing was undertaken. All producers felt fearful of the chaos that would result once the market did break as it would break badly. Always in the past there has had to be a period of market inaction and of curtailed production, for the market to find its real bottom. Whether this condition was marked to come sooner or later, it inevitably would have come eventually, and price fixing has this advantage to the producers that it has cut off a large part of the declines that would have occurred and established prices at a certain level, whereas if open market conditions had eventually produced

such a level it would be only a very temporary one.

Market Free to Operate.

While there are some details still to be arranged, probably through announcement of the American Iron and Steel Institute, as has been the case with various differentials and extras in the past few weeks, the market is in the main free to operate. On the whole it is not active, but it is on an average more active than it was just before the price fixing was inaugurated.

The situation was feeling the effect of the extremely high prices. It was impossible to blink the fact that the extremely high prices attained would operate to curtail consumption. They were paid with some freedom for a while, but not by the trade as a whole. Some consumers peculiarly circumstanced were able to pay almost any price for material, while others could pay the prices upon small lots, merely raising their averages a trifle as they had material coming to them on contract at much lower prices. The statement may be made that in general the fixed prices represent approximately the average prices at which material was being delivered at the time the prices were announced. Thus even in sheets, which had experienced a particularly great rise, the average invoice price of 26, 27 and 28 gauge sheets shipped in July and August, as shown by the sliding scale wage settlement, was between 5.00c and 5.05c while the set price now is 5.00c.

There is little doubt but that consumptive demand at the present time is distinctly less than it would be had the extreme rise in prices not occurred. Plans of manufacturing consumers were disarranged during the past few months by the prospect that they would have to pay extremely high prices, and it was not until the last week in September that it became known for certain that Government price control, at a reasonable level, would be accepted by the producing trade.

Production and Requirements.

The first publication of statistics of

railroads, that if there is a question between the railroads buying nothing and the railroads being able to buy and apply all the steel required to put them in the good physical condition required for the fullest prosecution of the war, the settlement of that question will in itself settle whether steel is to be scarce or plentiful a few months hence.

The railroads have not been buying of late. If they continue not to buy there will be more steel, in certain forms, than the rest of the consuming demand can possibly absorb. The situation as to the railroads may be clarified in a few weeks. The reopened 15% rate case seems to be having favorable consideration by the Interstate Commerce Commission, but it does not necessarily follow that the railroads would buy freely if the full advance were granted. Steel prices as set are a trifle more than double the average of the ten years ending 1913 and even if equipment were brought down to the

same ratio the railroads might not feel safe in investing freely. In any event it would be necessary for the Government to use its authority, in the matter of priorities, to give them very early deliveries of such cars and locomotives as they would be disposed to buy.

New Situation Confuses.

It is an entirely new market situation, and that confuses many, particularly those who comprise "Wall Street". They are disturbed, for instance, by the continued and rather rapid decline in the "unfilled orders". In this new market situation, however, with prices set, and with priority in the filling of various orders dictated by Washington, there is no occasion for there to be a large volume of unfilled orders on mill books. They would do no good to either seller or buyer but would simply cause confusion. The situation is in process of change from a large amount of business on books to a small amount. Price fixing and priority regulations are

Finished Steel Prices.

(Averaged from daily quotations, f.o.b. Pittsburgh.)

	Shapes	Plates,	Bars,	Pipe,	Wire,	Wire Nails,	Grooved Steel Skelp,	Black,	Galv.	Blue Annld.	Tin plate,	Comp. Fin steel.
1916.												
January	1.87	1.90	1.87	76 $\frac{3}{4}$	1.98	2.13	1.75	2.60	4.75	2.55	3.75	2.1410
February ..	2.06	2.16	2.06	75 $\frac{1}{2}$	2.11	2.26	1.94	2.60	4.80	2.65	3.83	2.2988
March	2.36	2.53	2.36	73 $\frac{3}{4}$	2.25	2.40	2.24	2.73	4.93	2.85	4.20	2.5579
April	2.50	2.75	2.50	71 $\frac{1}{2}$	2.25	2.40	2.35	2.89	5.00	2.95	4.70	2.7166
May	2.50	2.83	2.50	70	2.45	2.50	2.35	2.90	5.00	3.00	5.46	2.8043
June	2.50	2.90	2.50	70	2.45	2.50	2.35	2.90	4.80	3.00	5.75	2.8300
July	2.50	2.90	2.50	70	2.45	2.50	2.35	2.90	4.40	2.90	6.00	2.8425
August ...	2.54	2.94	2.56	70	2.53	2.58	2.35	2.90	4.20	2.90	5.54	2.8588
September .	2.60	3.00	2.60	69 $\frac{1}{2}$	2.55	2.60	2.35	2.91	4.20	2.90	5.75	2.9013
October ...	2.63	3.07	2.62	69	2.59	2.64	2.40	3.23	4.50	3.15	5.77	2.9747
November .	2.86	3.33	2.76	68 $\frac{1}{2}$	2.79	2.84	2.75	3.72	5.34	3.66	6.40	3.2036
December ..	3.03	3.53	2.93	66	2.95	3.00	2.85	4.40	6.27	3.65	7.18	3.4679
Year	2.50	2.82	2.48	70 $\frac{3}{4}$	2.45	2.53	2.34	3.06	4.85	2.99	5.34	2.8009
1917.												
January	3.11	3.61	3.00	64	2.95	3.00	2.85	4.50	6.50	4.25	7.23	3.5249
February ...	3.25	3.75	3.00	62 $\frac{3}{4}$	2.95	3.00	2.85	4.63	6.75	4.50	7.83	3.6529
March	3.52	4.33	3.27	60 $\frac{1}{4}$	3.13	3.18	3.50	4.90	7.00	4.70	8.00	3.9454
April	3.70	4.50	3.39	55	3.23	3.28	3.50	5.83	7.40	5.40	7.60	4.1965
May	4.00	4.50	3.64	49	3.45	3.50	3.75	6.73	9.00	6.70	8.00	4.5272
June	4.25	7.10	4.00	49	3.66	3.71	5.00	7.50	9.75	8.00	8.00	5.1587
July	4.50	9.00	4.50	42	3.95	4.00	6.00	8.00	10.50	8.25	8.00	5.7975
August ...	4.50	8.96	4.50	43 $\frac{1}{2}$	3.95	4.00	5.50	8.00	10.35	8.00	8.00	5.7161
September .	4.06	7.05	3.88	49	3.95	4.00	5.00	8.00	9.75	8.00	8.00	5.1865
October	5.00	3.25	2.00	49	3.95	4.00	5.68	7.42	8.00	7.50	8.00	4.1449

enough to produce this change, and the fact that it occurs is not in itself any indication that the consumptive demand for steel is decreasing. It is decreasing, of course, as to commercial steel, but war requirements, with the many ramifications, may be sufficient to make up, though it is very far from certain that they will do so.

Pig Iron.

On the whole, the pig iron market has been more active since prices were set than it was for two or three months previously. The blast furnaces have been quick to adopt the full spirit of the price agreement and are making sales freely when they can spare the iron and it is needed by regular customers. There is a disposition to avoid making sales to new inquirers, for these may have contracts with other

producers at higher than the set prices.

The activity in the pig iron market does not mean that pig iron is plentiful, physically speaking. It is as scarce as ever, if not scarcer.

Steel.

Transactions in unfinished steel have been the exception since prices were set, but that is merely a continuation of former conditions. The offerings are only of odd lots arising in the course of mill operations.

In finished steel products there is only a very moderate degree of activity. In most lines the mills prefer not to sell for extended deliveries, while they are well sold for early deliveries. In the case of sheets and tin plates the order books of the leading interest, for the first half of 1918, will probably be opened before the close of November.

Government Iron and Steel Prices.

(Continued from page 483.)

con is \$43, cold blast being \$55 maximum.

Bars, 2.90c; shapes, 3.00c; plates, 3.25c, f.o.b. Pittsburgh or Chicago. Usual differentials, etc., to apply.

October 11.

Billets 4x4 and larger, \$47.50; small billets, \$51; slabs, \$50; sheet bars, \$51, f.o.b. Pittsburgh or Youngstown. A slab has width at least twice the thickness, other material being billets, and standard billets if the sectional area is 16 square inches or more.

Wire rods, \$57, Pittsburgh.

Skelp, grooved, 2.90c; universal, 3.15c; sheared, 3.25c; Pittsburgh.

Shell steel bars, net, no extras: 3 to 5-inch inclusive, 3.25c; over including 8-inch, 3.50c; over including 10-inch, 3.75c; over 10-inch, 4.00c, Pittsburgh.

November 5.

Sheets: Black, 28 gauge, 5.00c; blue

annealed, 10 gauge, 4.25c; galvanized, 25 gauge, 6.25c, Pittsburgh. Usual gauge differentials will probably prevail, but possibly 16 and nearby gauges of black will sell at under set maximum to compete with 16 gauge blue annealed. Bessemer and open-hearth same price.

Tin plate, \$7.75 per base box, 100-pound, no extra for open-hearth.

Plain wire, 3.25c. This will probably establish the following: Galvanized wire, 3.95c; wire nails, \$3.50; painted barb wire, 3.65c; galvanized barb wire, 4.35c. Wire fence may be set at 47%.

Standard steel pipe, 3 $\frac{1}{4}$ to 3-inch, 52, 5 and 2 $\frac{1}{2}$ % net off list. This corresponds to a published list based on 51% with usual trimmings, and all tubular goods are being adjusted in accordance.

Railroad Earnings.

Per mile of road, compiled by Bureau of Railway Economics.

	1913-14			1914-15			1915-16		
	Revenue.	Expense.	Net.	Revenue.	Expense.	Net.	Revenue.	Expense.	Net.
July	\$1,183	\$837	\$346	\$1,127	\$786	\$341	\$1,130	\$750	\$380
August ..	1,244	856	388	1,174	788	386	1,190	764	426
September	1,257	854	403	1,185	783	402	1,251	774	477
October ..	1,314	891	423	1,171	787	384	1,323	815	508
November	1,180	884	337	1,026	734	292	1,303	801	502
December.	1,116	821	296	993	730	263	1,253	802	451
January ..	1,021	795	226	939	718	221	1,133	798	335
February ..	914	746	168	900	680	220	1,141	801	340
March	1,091	801	290	1,015	722	293	1,260	844	416
April	1,038	782	256	1,013	724	289	1,223	827	396
May	1,047	800	247	1,044	735	309	1,306	856	450
June	1,097	789	308	1,094	732	362	1,301	851	450
Fiscal year	13,480	9,801	3,682	12,678	8,915	3,763	14,818	9,684	5,134

	1916-17			1917-18		
	Revenue.	Expense.	Net.	Revenue.	Expense.	Net.
July	\$1,315	\$848	\$467	\$1,507	\$1,029	\$478
August ..	1,418	882	536			
September	1,409	881	528			
October ..	1,466	910	556			
November	1,396	894	502			
December	1,345	905	440			
January ..	1,301	930	371			
February.	1,147	899	248			
March ...	1,373	992	381			
April	1,383	986	397			
May	1,498	1,034	464			
June	1,514	1,020	494			
Fiscal yr.	16,565	11,181	5,384			

Wage Scale Averages.

Sworn averages of prices obtained by mills for shipments in months named, used in fixing wages under Amalgamated Association sliding scales.

Bar Iron.

	1914.	1915.	1916.	1917
Jan.-Feb.	1.1590	1.024	1.40	2.35
Mar.-April	1.176	1.087	1.60	2.45
May-June	1.1257	1.10	1.85	2.65
July-Aug.	1.0928	1.15	1.95	2.75
Sept.-Oct.	1.0847	1.15	2.00	8.85
Nov.-Dec.	1.037	1.30	2.15	
Year's av.	1.1125	1.144	1.86	

Sheets and Tin Plates.

	Sheets.		Tin Plates.	
	1916.	1917.	1916.	1917.
Jan.-Feb.	2.25	3.40	3.50	4.95
Mar.-April ..	2.50	3.90	3.70	5.75
May-June ...	2.60	4.45	3.90	6.85
July-Aug. ...	2.70	5.00	4.05	7.75
Sept.-Oct. ..	2.75		4.10	
Nov.-Dec. ...	2.80		4.25	
Year's av. ..	2.60		3.92	

Pig Iron Production.

Rates per annum, including charcoal pig.

August	39,200,000
September	39,300,000
October	41,700,000
November	40,700,000
December	37,700,000
January, 1917	37,460,000
February	34,750,000
March	38,600,000
April	40,900,000
May	40,600,000
June	37,200,000
July	39,700,000
August	38,600,000
September	38,500,000
October	39,250,000
On November 1st	40,200,000
Average since January 1st	38,900,000

Actual production:

1910	27,303,567
1913	30,966,162
1914	23,332,244
1915	29,916,213
1916	39,434,797

Comparison of Metal Prices.

	Range for 1915		Range for 1916		Range for 1917		Closing.
	High.	Low.	High.	Low.	High.	Low.	Oct. 31.
Pig Iron.							
							1917.
Bessemer, valley	21.00	13.60	35.00	20.00	56.00	35.00	36.30
Basic, valley	18.00	12.50	30.00	17.75	54.00	30.00	33.00
No. 2 foundry, valley	18.50	12.50	30.00	18.25	53.00	30.00	33.00
No. 2X fdy. Philadelphia. .	19.50	14.00	30.75	19.50	52.75	30.75	33.75
No. 2 foundry, Cleveland .	18.80	13.00	30.95	18.50	54.30	30.95	33.30
No. 2X foundry, Buffalo. .	18.00	11.75	35.00	18.00	53.00	33.00	33.00
No. 2 foundry, Chicago ..	18.50	13.00	30.00	18.00	55.00	30.00	33.00
No. 2 South'n Birmingham	14.50	9.25	25.00	14.00	48.00	24.00	33.00
Scrap Iron and Steel.							
Melting steel, Pittsburgh. .	18.00	11.00	27.00	16.00	47.00	22.00	28.50
Heavy steel scrap, Phila. . .	16.25	9.50	24.50	14.75	42.00	20.50	27.00
Heavy melt. steel, Chicago .	15.25	8.75	24.00	14.50	43.00	21.50	27.50
No. 1 R. R. wrought, Pitts. .	17.25	10.75	29.00	17.50	47.00	19.50	33.00
No. 1 cast, Pittsburgh	15.00	11.00	23.50	14.75	38.00	19.75	26.50
Iron and Steel Products.							
Bessemer rails, mill	28.00	23.00	38.00	28.00	38.00	38.00	38.00
Iron bars, Pittsburgh	1.90	1.20	3.25	1.90	5.25	3.25	4.75
Iron bars, Philadelphia ..	2.06	1.12½	3.16	2.06	5.16	3.16	4.19
Steel bars, Pittsburgh	1.80	1.10	3.00	1.85	4.50	2.90	2.90
Tank plates, Pittsburgh ...	1.60	1.10	3.60	1.85	9.00	3.25	3.25
Structural shapes, Pitts. . .	1.80	1.10	3.10	1.85	4.50	3.00	3.00
Grooved steel skelp, Pitts..	1.75	1.12½	2.85	1.75	6.00	2.85	2.90
Black sheets, Pittsburgh ..	2.60	1.70	4.50	2.60	9.00	4.50	5.50
Galv. sheets, Pittsburgh ...	5.00	2.65	6.50	4.15	11.00	6.25	7.00
Tin plate, Pittsburgh	3.60	3.10	7.50	3.75	8.50	7.00	8.25
Wire nails, Pittsburgh	2.10	1.50	3.00	2.10	4.00	3.00	4.00
Steel pipe, Pittsburgh	79%	81%	64%	78%	42%	64%	49%
Connellsville Coke at ovens.							
Prompt furnace	3.50	1.50	12.00*	2.50	16.00	6.00	6.00
Prompt foundry	3.75	2.00	12.00	3.25	16.00	6.00	6.00
Metals—New York.							
Straits tin	57.00	32.00	56.00	37.50	66.50	42.50	66.00
Lake copper	23.00	13.00	36.00	23.00	37.00	*23.50	*23.50
Electrolytic copper	23.00	12.80	36.00	23.00	37.00	*23.50	*23.50
Casting copper	22.00	12.70	34.00	22.00	34.00	*23.50	*23.50
Sheet copper	27.25	18.75	42.00	28.00	44.00	35.00	36.00
Lead (Trust price)	7.00	3.70	7.50	5.50	11.00	5.50	5.50
Spelter	27.25	5.70	37.17½	8.37½	11.50	7.80	7.80
Chinese and Jap. antimony	40.00	13.00	45.00	10.50	36.00	14.00	14.00
Aluminum, 98-99%	60.00	18.75	67.00	53.00	64.00	36.00	37.00
Silver	56½	46¼	77¼	55½	108½	79	90½
St. Louis.							
Lead	7.50	3.50	8.25	5.45	12.00	5.42½	5.81½
Spelter	27.00	5.55	21.00	8.20	10.87½	7.62½	7.62½
Sheet zinc (f.o.b. smelter)	33.00	9.00	25.50	15.00	21.00	19.00	19.00
London.							
	£	£	£	£	£	£	£
Standard tin, prompts	190	148¾	205	161½	257¾	180¾	257¾
Standard copper, prompts .	86¾	57½	153	84	146	110	110
Lead	30¾	18¾	36½	27¾	30½	30½	30½
Spelter	110	28½	110	44	55	45½	54
Silver	27¼d	22¾d	37d	26½d	55d	35½d	45½d

* Government price.

Comparison of Security Prices.

	Range for 1915		Range for 1916		Range for 1917		Closing, Oct. 31,
	High.	Low.	High.	Low.	High.	Low.	1917.
Iron and Industrial Stocks.							
Allis-Chalmers Mfg.	49½	7¾	38	19	32½	17½	17¾
Allis-Chalmers Mfg. pfd.	85½	33	99	70½	86½	71	73½
American Can.	68½	25	68½	44	53	35¾	36
American Can pfd.	113½	89	115½	107½	111½	94½	96
American Car & Fdy.	98	40	78½	52	80½	57	60
American Locomotive.	73¾	19	98¼	58	82¾	50	50
American Smelt'g & Refining	108½	56	123¾	88½	112¾	75	75½
American Steel Foundries ..	74½	24½	73	44	75½	52	55
American Zinc, Lead & Smelt'g	71	67½	97½	29¾	41½	12½	14
Anaconda Copper.	91½	49½	105½	77	87	55	59¾
Baldwin Locomotive.	154½	26½	118½	52	76½	43	55½
Bethlehem Steel.	600	46¾	700	415	515	70½	78½
Bethlehem Steel pfd.	184	91	168	126	135	84	96¾
Chino Copper.	57½	32¾	74	46½	63¾	38½	40¾
Colo. Fuel & Iron Co.	66½	21¾	63¾	38½	58	33	35½
Crucible Steel.	109½	18½	99½	50½	91½	50½	61¼
Crucible Steel pfd.	112½	84	124½	108½	117¾	80½	89½
Driggs-Seabury. ....	...	...	119¾	45½	87½	39½	72
General Electric.	185½	138	187½	159	171¾	125½	128
Granby Consolidated.	91	79¾	120	80	92½	68½	70
Great Northern Ore Prop. ..	54	25¾	50¾	32	38½	22¾	26½
Gulf States Steel. ....	...	...	193	71	137	81	87½
International Harv. of N. J..	114	90	126½	108½	123	101¼	102
Inter. Harv. of N. J. pfd. ...	85	55	122	114	121	110	110
International Harv. Corp. ...	114	90½	90½	68½	88	54	57
Inter. Harv. Corp., pfd. ...	120	100	114¾	104½	114	101	103
Lackawanna Steel.	94¾	28	107	64	103½	70½	76½
National Enam. & Stamp.	36½	9½	36½	19¾	46¾	24	37
National Enam. & Stamp. pfd.	97	79	100½	90½	101	90½	94
National Lead.	70¾	44	74½	57	63¾	43	44½
National Lead, pfd.	115	104¾	117½	111½	114	100	101½
New York Air Brake.	164¾	56½	186	118	156	98	111
Pressed Steel Car.	78¾	25	88½	42½	83½	52½	54
Pressel Steel Car, pfd.	106	86	108	8½	106	98½	98¼
Railway Steel Spring.	54	19	61¾	32	58	37½	39
Railway Steel Spring pfd. ..	102	86½	103¾	95¾	101	94	96
Ray Consolidated Copper.	27½	15¾	37	20	32½	21	22
Republic Iron & Steel.	57¾	19	93	42	94½	60	74½
Republic Iron & Steel, pfd. ...	112½	72	117	101	105½	96¾	98½
Sloss-Sheffield.	66½	22	93¼	37	74¾	36½	37½
Sloss-Sheffield, pfd.	102	85	103½	91½	99	88¼	88¼
Texas Company.	237	120	241½	177½	243	135½	141
U. S. Cast Iron Pipe.	31½	8	28½	16½	24½	11½	12½
U. S. Cast Iron Pipe pfd.	55½	32½	67½	48½	62¾	50	50
U. S. Smelting & Refining. ....	...	...	81½	57	67¾	44	46
U. S. Smelting & Refining pfd. ...	...	...	53½	50	52¼	48	48
U. S. Steel Corporation.	89½	38	129¾	79¾	136½	93½	100¾
U. S. Steel Corporation, pfd. ...	117	102	123	115	121¼	111½	113
Utah Copper.	81¾	48½	130	73¾	118¾	74¾	80
Virginia Iron, Coal & Coke..	74	36	72¾	41	77	46	55
Westinghouse Elec. & Mfg. ..	74¾	32	71½	51½	56	39½	41½

Composite Steel.

Computation for November 1, 1917.

Pounds.	Group.	Price.	Extension.
2½	Bars	2.90	7.250
1½	Plates	3.25	4.875
1½	Shapes	3.00	4.500
1½	Pipe (¾-3)	5.00	7.500
1½	Wire nails	4.00	6.000
1	Sheets (28 lb.)	5.50	5.500
½	Tin plates	8.00	4.000
10 pounds			39.625
One pound			3.9625

Averaged from daily quotations:

	1913.	1914.	1915.	1916.	1917.
Jan.	1.7737	1.5394	1.4554	2.1410	3.5525
Feb.	1.7625	1.5794	1.4716	2.2988	3.6529
Mar.	1.7646	1.5638	1.5098	2.5579	3.9454
April	1.7742	1.5337	1.5357	2.7165	4.1965
May	1.7786	1.5078	1.5381	2.8043	4.5272
June	1.7719	1.4750	1.5312	2.8300	5.1587
July	1.7600	1.4805	1.5692	2.8425	5.7975
Aug.	7.7400	1.5241	1.6059	2.8588	5.7161
Sept.	1.7093	1.5632	1.6506	2.9013	5.1865
Oct.	1.6779	1.5236	1.7264	2.9747	4.1449
Nov.	1.6203	1.4769	1.9089	3.2036	
Dec.	1.5556	1.4324	2.0329	3.4679	
Year	1.7241	1.5182	1.6280	2.8009	

Scrap Iron and Steel Prices.

Melting Steel. Bundled Sheet No. 1 R. R. No. 1 No. 1 Heavy
Pitts. Pitts. Pitts. Wrought Cast. Steel. Mel't'g.
Pitts. Pitts. Pitts. Phila. Ch'go.

Averaged from daily quotations:

1916—						
Mar.	18.40	14.80	19.15	15.75	17.15	16.75
Apr.	18.00	14.75	19.25	16.00	18.00	16.75
May	17.00	13.65	19.65	16.10	17.00	15.90
June	16.25	13.00	19.00	15.40	15.45	14.80
July	16.70	12.50	18.80	15.30	15.00	14.30
Aug.	16.25	11.70	18.15	15.00	15.00	15.30
Sep.	16.61	11.65	18.35	15.00	15.00	16.00
Oct.	18.25	11.65	19.30	15.80	15.65	17.35
Nov.	22.50	13.75	21.25	17.75	18.25	21.00
Dec.	25.50	16.00	27.20	21.40	23.95	23.65
Year	18.37	13.38	19.73	16.16	16.92	16.90
1917—						
Jan.	23.50	16.25	23.75	20.75	22.75	23.50
Feb.	22.50	15.75	22.50	19.75	21.15	22.25
Mar.	24.00	16.25	26.00	22.00	23.00	24.30
Apr.	27.75	17.25	30.50	24.00	25.50	27.30
May	29.25	19.25	33.00	25.25	26.50	29.00
June	40.75	24.00	40.50	32.25	34.50	38.50
July	38.75	25.35	44.00	33.50	36.00	35.50
Aug.	34.00	24.15	36.00	30.50	31.50	32.10
Sept.	34.00	23.25	32.00	31.00	32.00	32.00
Oct.	29.35	21.00	32.00	27.00	27.00	27.50

Composite Pig Iron.

Computation for November 1, 1917.

One ton Bessemer, valley	\$36.30
Two tons basic, valley (33.00)	66.00
One ton No. 2 foundry, valley	33.00
One ton No. 2 foundry, Philadelphia	33.75
One ton No. 2 foundry, Buffalo	33.25
One ton No. 2 foundry, Cleveland	33.30
One ton No. 2 foundry, Chicago	33.50
Two tons No. 2 Southern foundry,	
Cincinnati (35.00)	71.80
Total, ten tons	340.90
One ton	34.09

Averaged from daily quotations:

	1913.	1914.	1915.	1916.	1917.
Jan.	17.391	13.492	13.070	18.690	30.752
Feb.	17.140	13.721	13.079	18.564	30.946
Mar.	16.775	13.843	12.971	18.857	34.353
April	16.363	13.850	12.914	19.021	39.140
May	15.692	13.808	13.206	18.965	42.037
June	14.968	13.606	13.047	18.552	48.160
July	14.378	13.520	13.125	18.585	52.556
Aug.	14.365	13.516	14.082	18.514	51.927
Sept.	14.692	14.503	14.893	18.697	47.278
Oct.	14.737	14.267	15.213	20.192	34.090
Nov.	14.282	13.047	16.398	25.243	
Dec.	13.838	13.073	17.987	30.082	
Year	15.418	13.520	14.150	20.306	

Unfinished Steel and Iron Bars.

(Averaged from daily quotations.)

	Sheet Billets. Pitts.	Bars. Pitts.	Rods. Pitts.	—Iron bars, deliv.— Phila. Pitts. Ch'go.
1916—				
Mar.	41.00†	41.00†	56.00	2.56 2.40 2.17
Apr.	45.00	45.00	60.00	2.62 2.50 2.35
May	43.00	43.00	59.00	2.66 2.60 2.35
June	42.00†	42.00†	58.00	2.66 2.60 2.35
July	42.50†	42.50†	58.00	2.66 2.60 2.35
Aug.	46.00	46.00	58.00	2.66 2.60 2.35
Sep.	47.00	45.00	58.00	2.66 2.70 2.35
Oct.	48.00	48.00	59.00	2.66 2.75 2.35
Nov.	52.75	54.00	65.00	2.66 2.85 2.50
Dec.	56.96	56.96	70.00	3.02 3.19 2.89
Year	44.23	44.17	57.58	2.57 2.59 2.31
1917—				
Jan.	63.50	63.50	75.00	3.16 3.25 3.00
Feb.	65.00	65.00	77.00	3.16 3.25 3.00
Mar.	68.00	68.00	79.00	3.41 3.46 3.00
Apr.	75.00	75.00	85.00	3.41 3.62 3.25
May	88.00	94.00	93.00	4.16 3.90 3.40
June	95.00	105.00	95.00	4.75 4.51 4.15
July	95.00	105.00	95.00	4.80 5.03 4.50
Aug.	84.00	94.00	92.00	4.92 5.00 4.50
Sep.	70.00	80.00	90.00	4.94 4.75 4.50
Oct.	55.25	59.00	67.75	4.46 4.75 4.50

† Premium for open-hearth.

Iron and Steel Imports and Exports.

Value of Tonnage and Non-Tonnage.

	1912.	1913.	1914.	1915.	1916.	1917.
January	\$18,451,914	\$25,141,409	\$16,706,836	\$18,053,421	\$51,643,807	\$108,423,640
February	21,801,570	24,089,871	16,520,260	16,470,751	54,145,496	85,117,010
March	24,474,799	27,221,210	20,551,137	20,985,505	58,266,144	111,164,876
April	26,789,853	27,123,044	20,639,569	25,302,649	58,655,447	102,560,345
May	28,050,247	26,718,970	19,734,045	26,536,612	72,926,180	107,362,635
June	24,795,802	25,228,346	18,927,958	31,730,132	76,257,844	119,141,826
July	24,917,952	24,170,704	16,737,552	35,892,106	71,067,232	77,782,294
August	25,450,107	23,947,440	10,428,817	37,726,657	86,296,703	
September ...	23,286,040	22,831,082	12,531,102	38,522,175	90,895,592	
October	25,271,559	25,193,887	16,455,832	43,299,457	82,010,972	
November	26,406,425	20,142,141	15,689,401	48,056,220	77,570,840	
December	23,750,864	22,115,701	14,939,613	45,825,147	88,536,958	
Totals	\$289,128,420	\$293,934,160	\$199,861,684	\$388,400,832	\$867,327,044	\$712,426,557

Exports of Tonnage Lines,---Gross Tons.

	1910.	1911.	1912.	1913.	1914.	1915.	1916.	1917.
January	118,681	152,362	151,575	249,493	118,770	140,550	357,122	608,286
February	110,224	150,919	204,969	241,888	121,206	139,946	368,981	449,107
March	124,980	216,360	218,219	257,519	159,998	174,104	438,656	606,563
April	117,921	228,149	267,313	259,689	161,952	223,587	384,796	521,179
May	135,306	178,589	307,656	242,353	139,107	263,113	538,651	588,515
June	120,601	174,247	273,188	243,108	144,539	356,451	528,022	631,606
July	127,578	162,855	272,778	237,159	114,790	380,336	503,685	349,649
August	131,391	177,902	282,645	209,856	86,599	405,952	597,750	522,810
September	119,155	181,150	248,613	213,057	96,476	382,118	643,767	
October	129,828	186,457	251,411	220,550	147,293	349,848	610,125	
November	155,138	187,554	233,342	175,961	140,731	362,766	554,859	
December	150,102	190,854	235,959	181,715	117,827	353,856	580,961	
Totals	1,540,895	2,187,724	2,947,596	2,745,335	1,549,554	3,532,606	6,110,790	4,277,715

Iron Ore Imports.

	1914.	1915.	1916.	1917.
Jan. ..	101,804	75,286	89,844	97,440
Feb. .	112,574	78,773	94,315	86,314
Mar. .	68,549	88,402	93,383	95,989
April. .	111,812	91,561	75,712	58,878
May .	125,659	98,974	148,599	66,762
June .	188,647	118,575	134,154	54,846
July .	141,838	119,468	156,755	89,729
Aug. .	134,913	126,806	127,094	
Sept. .	109,176	173,253	109,747	
Oct. .	114,341	138,318	95,833	
Nov. .	90,222	113,544	82,257	
Dec. .	51,053	118,321	118,043	

Totals 1,350,588 1,341,281 1,325,736 549,958

Iron and Steel Imports.

	1913.	1914.	1915.	1916.	1917.
Jan. .	21,740	17,776	10,568	15,824	39,991
Feb. .	25,505	14,757	7,506	20,279	24,380
Mar. .	27,467	27,829	8,025	15,159	37,280
April. .	25,742	30,585	16,565	20,175	48,055
May .	28,728	28,173	28,916	32,113	26,037
June .	36,597	23,076	32,200	26,885	28,413
July .	36,694	25,282	20,858	14,774	28,859
Aug. .	18,740	28,768	27,557	32,257	26,121
Sept. .	19,941	38,420	23,344	25,558	
Oct. .	20,840	22,754	34,319	30,170	
Nov. .	25,809	24,165	36,931	42,544	
Dec. .	26,454	9,493	35,409	44,133	

Total 317,260 289,778 282,413 275,743 259,136

Price Changes of Iron and Steel Products From July 7, 1916 to Date.

Price changes in merchant bars, structural shapes, plates, wire nails, merchant pipe, sheets and tin plates are given below, with dates. These are the commodities used in compiling our **composite finished steel**. In some cases the dates named are those upon which prominent producers announced price changes, but more frequently the rates are merely those upon which our quotations were changed. A few other price changes are included.

1916—							
July	7	Blue ann. sheets	3.00 to 2.90	Nov.	25	Grooved skelp	2.60 to 2.85
"	7	Galv. sheets	4.75 to 4.50	"	27	Blue ann. sheets	3.40 to 3.50
Aug.	1	Tin plate	6.00 to 5.50	"	27	Galv. sheets	5.50 to 5.75
"	7	Wire nails	2.50 to 2.60	"	27	Wire nails	2.85 to 3.00
"	15	Bars	2.50 to 2.60	Dec.	4	Pipe	68% to 66%
"	18	Shapes	2.50 to 2.60	"	4	Sheets	4.00 to 4.25
"	18	Plates	2.90 to 3.00	Dec.	5	Galv. sheets	5.75 to 6.00
"	25	Galv. sheets	4.25 to 4.15	"	5	Blue ann. sheets	3.50 to 3.65
Sept.	7	Pipe	70% to 69%	"	11	Sheets	4.25 to 4.50
"	7	Boiler tubes	56% to 54%	"	11	Galv. sheets	6.00 to 6.25
"	20	Galv. sheets	4.15 to 4.25	"	20	Tin plate	7.00 to 7.50
"	28	Sheets	2.90 to 3.00	"	21	Bars	2.90 to 3.00
Oct.	3	Blue ann. sheets	2.90 to 3.00	"	21	Shapes	3.00 to 3.10
"	3	Galv. sheets	4.25 to 4.30	"	21	Plates	3.50 to 3.60
"	6	Sheets	3.00 to 3.10	"	26	Blue ann. sheets	3.75 to 4.00
"	7	Tin plate	5.50 to 6.00	"	30	Pipe	66% to 64%
"	13	Sheets	3.10 to 3.25	1917—			
"	13	Galv. sheets	4.30 to 4.40	Jan.	10	Galv. sheets	6.25 to 6.50
"	13	Tin plate	6.00 to 5.75	"	10	Blue ann. sheets	4.00 to 4.25
"	16	Galv. sheets	4.40 to 4.50	"	16	Tin plate	7.00 to 7.50
"	19	Wire nails	2.60 to 2.70	"	30	Shapes	3.10 to 3.25
"	20	Sheets	3.25 to 3.35	"	30	Plates	3.60 to 3.75
"	20	Blue ann. sheets	3.00 to 3.15	Feb.	8	Tin plate	7.00 to 8.00
"	24	Plates	3.00 to 3.25	"	14	Pipe	64% to 62%
"	25	Bars	2.60 to 2.70	"	15	Sheets	4.50 to 4.75
"	25	Shapes	2.60 to 2.70	"	16	Blue ann. sheets	4.25 to 4.50
"	25	Grooved skelp	2.35 to 2.50	Mar.	5	Pipe	62% to 60%
"	26	Sheets	3.35 to 3.40	"	5	Wire nails	3.00 to 3.20
"	26	Galv. sheets	4.50 to 4.75	"	8	Bars	3.00 to 3.25
"	27	Blue ann. sheets	3.15 to 3.30	"	8	Plates	3.75 to 4.50
"	30	Tin plate	5.75 to 6.00	"	8	Shapes	3.25 to 3.60
"	31	Shapes	2.70 to 2.80	"	14	Sheets	4.75 to 5.00
Nov.	1	Boiler tubes	54% to 52%	"	14	Galv. sheets	6.50 to 6.75
"	6	Wire nails	2.70 to 2.85	"	20	Blue ann. sheets	4.50 to 4.75
"	8	Sheets	3.40 to 3.65	"	20	Galv. sheets	6.75 to 7.00
"	15	Tin plate	6.00 to 6.25	Apr.	2	Tin plate	8.00 to 7.50
"	15	Grooved skelp	2.50 to 2.60	"	2	Pipe	60% to 55%
"	15	Pipe	69% to 68%	"	3	Sheets	5.00 to 5.50
"	18	Galv. sheets	5.00 to 5.50	"	3	Blue ann. sheets	4.75 to 5.00
"	20	Tin plate	6.25 to 7.00	"	3	Galv. sheets	6.75 to 7.00
"	20	Sheets	3.65 to 4.00	"	18	Sheets	5.50 to 6.00
"	21	Bars	2.70 to 2.90	"	18	Blue ann. sheets	5.00 to 5.50
"	21	Plates	3.25 to 3.50	"	18	Galv. sheets	7.00 to 7.50
"	21	Shapes	2.80 to 3.00	"	20	Sheets	6.00 to 6.50
"	21	Blue ann. sheets	3.30 to 3.40	"	20	Blue ann. sheets	5.50 to 6.00
"	21	Boiler tubes	52% to 46%	"	20	Galv. sheets	7.50 to 8.00

Apr. 23	Wire nails	3.20	to 3.50
" 24	Bars	3.35	to 3.50
" 24	Shapes	3.60	to 4.00
" 25	Tin plate	7.50	to 8.00
May 1	Galv. sheets	8.00	to 9.00
" 3	Pipe	55¢	to 49¢
" 14	Bars	3.50	to 3.75
" 14	Plates	4.50	to 5.50
" 17	Sheets	6.50	to 7.00
" 17	Blue ann. sheets	6.00	to 6.50
" 18	Galv. sheets	8.00	to 8.50
" 18	Blue ann. sheets	6.50	to 7.00
" 18	Galv. sheets	8.50	to 9.25
June 7	Plates	5.50	to 7.00
" 8	Shapes	4.00	to 4.25
" 8	Galv. sheets	9.25	to 9.50
" 13	Sheets	7.00	to 7.50
" 13	Blue ann. sheets	7.00	to 7.50
" 15	Bars	3.75	to 4.00
" 18	Plates	7.00	to 8.00
" 19	Wire nails	3.50	to 4.00
" 20	Sheets	7.50	to 8.00
" 25	Bars	4.00	to 4.50
" 25	Shapes	4.25	to 4.50
" 25	Galv. sheets	9.50	to 10.00
" 28	Plates	8.00	to 9.00
" 29	Blue ann. sheets	7.50	to 8.00
July 2	Pipe	49¢	to 42¢
Aug. 8	Pipe	42¢	to 49¢
" 31	Plates	9.00	to 8.00
Sept. 7	Bars	4.50	to 4.00
" 17	Galv. sheets	10.00	to 9.50
" 17	Shapes	4.50	to 4.00
" 25	Bars	4.00	to 2.90*
" 25	Shapes	4.00	to 3.00*
" 25	Plates	8.00	to 3.25*
Oct. 16	Sheets	8.00	to 7.25
" 16	Blue ann. sheets	8.00	to 7.75
" 16	Galv. sheets	9.50	to 9.00
" 26	Sheets	7.25	to 6.00
" 26	Blue ann. sheets	7.75	to 6.00
" 26	Galv. sheets	9.00	to 7.50
" 29	Sheets	6.00	to 5.50
" 29	Blue ann. sheets	6.00	to 5.50
" 29	Galv. sheets	7.50	to 7.00
Nov. 5	Sheets	5.50	to 5.00
" 5	Blue ann. sheets	5.50	to 5.00*
" 5	Galv. sheets	7.00	to 6.50
" 6	Blue ann. sheets	5.00	to 4.25*
" 6	Galv. sheets	6.50	to 6.25*
" 6	Wire nails	4.00	to 3.50*
" 6	Pipe	49¢	to 51¢*
" 6	Shafting	10¢	to 17¢*
" 6	Tin plate	8.00	to 7.75*

* Government price.

Steel Making Pig Iron Averages.

Bessemer and basic pig iron averages compiled by Messrs. W. P. Snyder & Company from sales in the valley market of 1,000 tons and over.

	Bessemer.		Basic.	
	1916.	1917.	1916.	1917.
Jan. ...	\$20.645	\$35.00	\$17.833	\$30.00
Feb. ..	20.2136	35.418	17.984	30.00
Mar. ..	20.8625	36.423	18.25	32.537
April ..	20.70	41.332	18.00	37.996
May ..	20.833	45.9917	18.1607	41.8947
June ..	21.00	53.266	18.00	49.149
July ...	21.00	56.50	18.00	52.848
Aug. ...	21.00	53.221	18.00	49.422
Sept. ...	21.9346	45.4506	18.63	41.344
Oct. ...	23.6576	36.30	20.3086	33.00
Nov. ...	29.12		27.229	
Dec. ...	34.213		30.00	
Year ..	22.9316		20.0329	

Above prices are f. o. b. valley furnace; delivered Pittsburgh is 95 cents higher.

British Iron And Steel Exports.

	Pig Iron.	Rails.	Tin Plate.	Totals.*
1912 ..	1,262,383	407,175	481,123	4,933,112
1913 ..	1,124,181	500,117	494,497	5,049,090
1914 ..	780,763	433,507	435,392	3,972,348
1915 ..	611,227	242,267	368,778	3,248,046
1916 ..	917,396	50,275	321,710	3,357,829
1916—				
June ..	77,487	3,243	30,351	310,625
July ...	69,999	3,485	38,174	298,929
Aug. ...	95,655	1,983	34,124	319,928
Sept. ...	72,683	2,712	19,226	231,335
Oct. ...	72,187	6,929	10,929	241,261
Nov. ...	49,986	16,411	4,571	224,554
Dec. ...	48,542	2,317	14,248	158,609
1917—				
Jan. ...	61,201	5,935	16,515	210,124
Feb. ...	59,970	851	11,069	186,308
Mar. ...	79,694	6,084	38,057	239,965
April ..	57,738	2,659	16,863	180,869
May ...	68,201	1,680	18,290	199,418
June ...	86,793	2,453	18,975	220,304
July ...	74,091	4,734	18,941	268,190
Aug. ...	65,383	3,611	14,867	215,061
Sept. ...	68,066	4,773	9,382	177,300
9 mos. ...	621,137	31,787	140,783	1,897,634

* Includes scrap, pig iron, rolled iron and steel, cast and wrought iron manufactures bolts, nuts, etc., but not finished machinery, boilers, tools, etc.

Immigration Statistics.

Years mentioned refer to fiscal years ended June 30th. Aliens admitted include immigrant and non-immigrant, aliens departed include immigrant and non-immigrant.

Excess Arrivals Over Departures.

	Aliens.	Citizens.	Total.
1913	815,303	*61,098	754,205
1914	769,276	*82,211	687,065
1915	50,070	67,167	117,237
1916	125,941	11,197	137,138
1917	216,498	1,409	217,907

September, 1915	*1,965	866	*1,099
October	4,877	662	5,539
November ..	3,292	*802	2,490
December ...	*570	*891	*1,461
January, 1916	7,303	*1,212	6,091
February	19,120	*1,826	17,594
March	23,791	4,198	27,989
April	26,143	4,471	30,614
May	24,708	2,021	26,729
June	22,184	65	22,249
July	2,832	*4,164	*1,332
August	2,205	*13,251	*11,046

July	18,244	3,634	21,878
August	21,413	304	21,717
September ..	29,310	1,443	30,753
October	28,339	*2,012	26,327
November ..	24,241	*183	24,058
December ...	18,791	*252	18,539
January, 1917	19,563	*1,790	17,773
February	14,145	*1,612	13,103
March	14,125	2,591	16,716
April	18,821	4,709	23,530
May	5,313	*7,525	*2,212
June	3,593	2,112	5,725

August, 1917.

Immigrant aliens in	10,047
Non-immigrants in	5,221
Total aliens in	15,268

Emigrant aliens out	7,569
Non-emigrant aliens out	5,494
Total aliens out	13,063

Citizens in	6,264
Citizens out	19,515
Excess citizens out	13,251

Change in population.

Aliens	+2,205
Citizens	-13,251
Net change	= -11,046

* Excess of departures.

Our Foreign Trade.

Value of merchandise imports and exports and favorable trade balance, calendar years.

	Imports.	Exports.	Balance.
1906	1,320,501,572	1,798,243,434	477,741,862
1907	1,423,169,820	1,923,426,205	500,256,385
1908	1,116,374,087	1,752,835,447	636,461,360
1909	1,475,520,724	1,728,198,645	252,677,921
1910	1,562,504,151	1,866,258,904	303,354,753
1911	1,532,359,160	2,092,526,746	560,167,586
1912	1,818,133,355	2,399,217,993	581,084,638
1913	1,792,596,480	2,848,018,292	691,421,812
1914	1,789,276,001	2,113,624,050	324,348,049
1915	1,778,596,695	3,554,670,847	1,776,074,152
1916	*2,391,654,335	*5,481,423,589	*3,089,769,254

1914—

Sept.	139,710,611	156,052,333	16,341,722
Oct.	137,978,778	195,283,852	57,305,074
Nov.	126,467,062	205,878,333	79,411,271
Dec.	114,656,545	245,632,558	130,976,013

1915—

Jan.	122,148,317	267,879,313	145,730,996
Feb.	125,123,391	298,727,757	173,604,366
Mar.	158,022,016	296,501,852	138,479,836
Apr.	160,576,106	294,745,913	134,169,807
May	142,284,851	273,769,093	131,484,242
June	157,695,140	268,547,416	110,852,276
July	143,099,620	267,978,990	124,879,370
Aug.	141,830,202	261,025,230	119,195,028
Sept.	151,236,026	300,676,822	149,440,796
Oct.	149,172,729	336,452,009	186,979,289
Nov.	155,496,675	327,670,353	172,173,678
Dec.	171,832,505	359,306,492	187,473,987

1916—

Jan.	184,350,942	330,036,410	145,685,468
Feb.	193,935,117	402,991,118	209,056,001
Mar.	213,589,785	410,742,034	197,152,249
Apr.	218,236,397	398,568,532	180,332,135
May	229,188,957	474,803,637	245,614,680
June	245,795,438	464,784,318	218,988,880
July	182,732,938	444,713,964	261,991,026
Aug.	199,247,391	509,778,680	310,531,289
Sept.	164,038,614	515,007,408	350,968,794
Oct.	178,658,730	492,813,918	314,155,188
Nov.	176,988,305	516,976,359	339,988,054
Dec.	204,834,188	521,650,904	316,816,716

1917—

Jan.	241,707,282	*613,555,693	*371,848,411
Feb.	199,479,996	467,683,406	268,203,410
Mar.	270,218,139	553,988,239	283,770,100
Apr.	253,916,966	530,252,295	276,335,329
May	280,706,164	552,795,022	272,088,858
June	*306,622,939	575,210,049	268,587,110
July	225,926,352	373,002,887	147,076,535
Aug.	267,854,767	490,009,171	222,154,404

* High record

U. S. Steel Corporation's Operations.

Earnings and Unfilled Orders.

Earnings by Quarters.

Net earnings by quarters since 1911:

Quarter.	1917.	1916.	1915.
1st	*\$113,121,018	\$60,713,624	\$12,457,809
2nd	*90,579,204	81,126,048	27,950,055
3rd	*68,243,784	85,817,067	38,710,644
4th	105,968,347	51,277,504	
Year ...	333,625,086	130,396,012	

* First quarter report contained no deduction contained deduction \$53,918,872, also cover first quarter tax, all according to deduction \$63,733,013 also deduction from for first half, both computed according to tion for excess profits tax. Second quarter deduction from surplus of \$33,865,000 to House bill. Third quarter report contained surplus \$12,716,724 to cover additional tax law meanwhile enacted.

	1914.	1913.	1912.
1st	\$17,994,382	\$34,426,802	\$17,826,973
2nd	20,457,596	41,219,813	25,102,266
3rd	22,276,002	38,450,400	30,063,512
4th	10,935,635	23,084,330	35,181,922
Year	71,663,615	137,181,345	108,174,673

Unfilled Orders.

(At end of the Quarter.)

First. Second. Third. Fourth.

1906 ..	7,018,712	6,809,584	7,936,884	4,489,718
1907 ..	8,043,858	7,603,878	6,425,008	4,642,553
1908 ..	3,765,343	3,313,876	3,421,977	3,603,527
1909 ..	3,542,590	4,057,939	4,796,833	5,927,031
1910 ..	5,402,514	4,237,794	3,158,106	2,674,757
1911 ..	3,447,301	3,361,058	3,611,317	5,084,761
1912 ..	5,304,841	5,807,346	6,551,507	7,932,164
1913 ..	7,468,956	5,807,317	5,003,785	4,282,108
1914 ..	4,653,825	4,032,857	3,787,667	3,836,643
1915 ..	4,255,749	4,678,196	5,317,608	7,805,220
1916 ..	9,331,001	9,540,458	9,522,584	11,547,286
1917 ..	77,711,644	11,383,287	9,833,475	

Bookings and Shipments.

In this table, first two columns, percentages of bookings and shipments to total capacity, our own estimates, while last column is derived from official reports of "unfilled tonnage" while third percentage column is directly computed from this tonnage column.

	Ship-ments.	Book-ings.	Dif-ference.	Dif-ference.
	%	%	%	Tons.
1915—				
June	79	113	+34	+413,598
July	83	104	+21	+250,344
August	91	89	— 2	— 20,085
September ...	98	133	+35	+409,163
October ...	103	172	+69	+847,834
November ...	102	186	+84	+1,024,037
December ...	102	152	+50	+615,731
1916—				
January ...	102	112	+10	+116,547
February ...	102	157	+55	+646,199
March	104	164	+60	+762,035
April	104	146	+42	+498,550
May	104	113	+ 9	+108,247
June	104	82	—22	—297,340
July	90	86	— 4	— 46,866
September ...	96	87	— 9	—137,773
October ...	106	145	+39	+492,676
November ...	104	189	+85	+1,042,282
December ...	96	136	+40	+488,744
1917—				
January ...	92	88	— 9	— 73,232
February ...	92	101	+ 9	+102,643
March	97	107	+10	+134,947
April	99	137	+38	+471,439
May	98	75	—23	—296,492
June	98	59	—39	—503,304
July	92	49	—43	—539,123
August	90	58	—32	—437,115
September ...	90	44	—46	—573,572
October	93	32	—61	—823,802

Total unfilled obligations, October 31st, 1917. 9,089,675 tons.

Lake Superior Iron Ore.

Shipments of iron ore down the lakes have been as follows, in gross tons:

	1913.	1914.	1915.	1916.	1917.
April	866,386	269,686	503,832	1,658,411	211,532
May	7,284,212	3,852,062	5,012,359	8,449,580	6,283,612
June	7,974,444	5,502,367	6,005,091	9,507,576	9,639,991
July	8,204,416	5,784,514	7,204,021	9,750,157	10,241,633
August	7,677,601	5,969,477	8,081,117	9,850,140	10,146,786
September	7,258,413	5,431,307	7,863,146	9,600,786	9,536,549
October	6,526,103	4,242,392	7,146,873	9,116,196	8,193,892
November ...	3,270,958	1,070,092	4,445,129	5,715,452	
December	18,545		57,236	1,085,900	
Season Lake ..	49,070,478	32,021,897	46,318,804	64,734,198	74,254,598

Tin Plate Movement.

United States imports and exports of tin plate in gross tons have been as follows, the imports of course including those for drawback purposes:

	Imports.	Exports.
1906	56,983	12,082
1907	57,773	10,293
1908	58,490	11,878
1909	62,592	9,327
1910	66,640	12,459
1911	14,098	61,466
1912	2,053	81,694
1913	20,680	57,812
1914	15,411	59,549
1915	2,350	154,642
1916	1,008	227,391
January, 1916	62	12,178
February	107	13,534
March	44	20,363
April	179	21,385
May	39	25,585
June	91	29,751
July	150	18,760
August	105	18,757
September	51	18,770
October	111	14,195
November	38	15,816
December	34	18,229
January, 1917	31	23,408
February	35	14,632
March	21	21,680
April	34	19,936
May	2	23,283
June	2	25,461
July	0	16,719
August	0	15,962

The Gould Rotary Sewing Machines, Ltd., Toronto, has been incorporated with a capital stock of \$35,000 by Frank Regan, 72 Queen Street West; Edward Murphy, Glen Sullivan and others, to manufacture sewing machines, tools, parts, accessories, etc.

The Salem Brass & Bronze Company, Salem, O., has been incorporated by C. J. Rath, J. M. Lyle, R. F. Fawcett, H. I. Bonsall and H. R. Kale.

The Darling Metal Goods Manufacturing Company, New York, has been incorporated with a capital of \$10,000 to manufacture metal specialties. R. S. Dring, B. E. Storm and J. E. Watson, 30 Church street, are the incorporators.

Car and Locomotive Buying.

Freight Cars Ordered.

1915: Domestic	105,000	
Export	20,000	
1916: Domestic	165,000	
Export	29,000	
1917: Domestic	44,707	
Export	69,002	
U. S. Ry. in France	17,797	
January	16,840	
February	19,566	
March	9,687	
April	1,772	
May	12,298	
June	6,055	
Six months		66,218
July	5,670	
August	13,262	
September	605	
October	45,751	

Locomotives Ordered.

1915: Domestic	1,500	
Export	800	
1916: Domestic	2,850	
Export	2,900	
1917: Domestic	1,988	
Export	2,246	
U. S. Ry. in France	1,164	
January	807	
February	299	
March	232	
April	339	
May	1,276	
June	575	
Six months		3,528
July	448	
August	775	
September	65	
October	647	

STRUCTURAL STEEL LETTINGS

Reports of the Bridge Builders' and Structural Society, lettings of structural steel contracts by months in percentage of the fabricating capacity, capacity being now about 180,000 tons a month.

	1914.	1915.	1916.	1917.
January	62	25	69	61½
February	63	30	75	59
March	76	64	102	68
April	88	62½	72½	61
May	57	61	80	56½
June	56½	80	58	47½
July	68	86	47½	41½
August	27½	85	64	38
September	38½	67	52½	29
October	35	78	77	
November	20	105	78	
December	35	121	86	
Average	52½	72	71¾	

Copper in October.

No Market in October—Practically No Metal Available at Government Price of 23.50c Per Pound—Situation Unprecedented; Industrial Situation Greatly Damaged—Consumers' and Producers' Committees Formed to Work in Conjunction With War Industries Board Covering Equitable Distribution of Metal.

The metal markets as a whole, continued to suffer from uncertainty in one form or another, brought about by the war conditions, during October. The copper industry which was among the first of the metals to feel the adverse influences was almost paralyzed when the prospect of Government regulation of prices developed soon after the United States Government's declaration that a state of war existed between this country and Germany. After prolonged delay in the matter, during which labor disturbances at mines and smelters further harassed the industry and reduced production, the trade came to believe that when the price fixing was eventually accomplished that business immediately would be improved. The contrary proved to be the fact, for business was completely suspended, instead, for many weeks, pending the settlement of the many problems that at once developed in regard to the application of the 23.50c per pound price for copper, that had been voluntarily agreed upon by the producers and the Government.

At the close of September, it was believed that all of the perplexities that had arisen would soon be cleared away but these sanguine expectations for a normal resumption of business were not realized in October, for it was discovered as the days passed into weeks, that the producers who had entered into the agreement with the Government had no copper to sell at the agreed upon price of 23.50c per pound. The trade was given to understand that before private consumers' needs could be considered that the requirements of the United States Government and its Allies—finally estimated to be 120,000,000 pounds per month for the remainder of 1917—must first be guaranteed and forthcoming. It was also estimated that approximately 80,000,000 pounds—an ample supply—per month, would

be available for the use of consumers over the last quarter of this year.

Producers' and Consumers' Committees Formed.

Rumors that were current at the close of September, in effect, that a pool was in progress of formation composed of members made up of producers and consumers on the one hand, to work in conjunction with representatives of the War Industries Board, on the other, in covering production and the equitable distribution of copper, were followed in October, by the organization of two committees, a Producers' Committee and a Consumers' Committee. Meetings were reported to be of almost daily occurrence but members attending, when asked for information as to the progress in adjustment that was being made, were unable to give out anything definite until after the middle of the month when it became known that requests for permits to make shipments on old contracts to American consumers were being considered and passed upon at such meetings. The Producers' Committee was in possession of all particulars regarding sales sheets, stocks and output and there is no longer any doubt in regard to an ample supply of copper. Deliveries to consumers continued to be made upon old contracts by producers, but the latter, would take on no new business.

Waste Materials Association Confers With Government on Price of Scrap Copper.

The scarcity of Lake and of Casting copper was such as to preclude sales of the former and to permit of only small sales of the latter. It was understood by this time, however, that casting copper would be included in the 23.50c per pound price, eventually. The Waste Materials Association, also, was

reported to be negotiating with the Government authorities in regard to the price of scrap copper; new business in this line, as well as in the major market, being entirely suspended.

Small Sales At Over the Fixed Price.

Dealers and second hands, during all of the month, however, it was reported, continued to sell copper in small amounts to meet the mandatory requirements of consumers at prices ranging above the fixed price. Sales were reported from 26.00c early in the month to as high as 30.00c per pound, before these transactions were halted because of the sentiment existing in some circles against such sales as being contrary to the Government's intention in the matter.

It was late in the month, before any sales at 23.50c per pound were announced and then a few such contracts—Casting copper—were reported as having been placed for November delivery. At about the same time, or shortly after, Electrolytic copper was reported to have been sold at the co-operative price, for December delivery.

Exports in First Nine Months Very Large.

Copper exports for 1917, notwithstanding the July shortage, reveals the fact that the first nine months of the year—to October 1st—exceeded any other corresponding period in the history of the industry and were only 10,000 tons less than the previous maximum exports for twelve months, which was in 1913, the year before the war began and when Germany laid in huge supplies.

Weekly Statistics to be Collected.

On October 24th, the Geological Survey announced to the industry that the War Industries Board had requested that weekly statistics should be collected, covering production, stocks and commitments of copper, lead and zinc and sent to them. Reports furnished

will be considered confidential and will not be published. It is hoped that these statistics will aid the Government in forming conclusions that will result in the issuance of definite instructions to the trade that will enable the smaller consumers to obtain copper, at whatever price.

In the last week of the month, the Producers' Committee had entire control of the copper situation, being in charge of the sales of the country's entire output of copper. Mr. Edwin Mosebauer was placed in charge of the office that was opened in Washington, with the object of expediting business. Later, it was announced that this committee had decided that sales of copper could be made to consumers, only for actual consumption in their own plants and used in the course of their regular business.

After it became known that sales of both Casting and Electrolytic copper had been made for November and December delivery at 23.50c per pound, consumers entered the market in force, with numerous inquiries for earlier delivery, at the same price, but no copper at 23.50c has been available.

It is reported that the difficulties of the jobber and the small consumer will soon be cleared away, but actual facts show that on this point no progress in the past three weeks has taken place.

During the entire month an unprecedented condition has existed in the copper market. New business has been at a complete standstill, and the industrial situation has suffered great damage.



Copper Prices in October

	— New York —			London.		
	Lake.	Electro.	Casting.	Standard.	£	s d
	Cents.	Cents.	Cents.			
High	*23.50	*23.50	*23.50		110	0 0
Low	*23.50	*23.50	*23.50		110	0 0
Aver.	*23.50	*23.50	*23.50		110	0 0

* Government price.

Lake Copper Prices.

Monthly average prices of Lake Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.89	14.56	13.89	24.10	29.83
Feb.	15.37½	14.98	14.72	27.44	34.04½
Mar.	14.96	14.72	15.11	27.42	35.33
Apr.	15.55	14.68	17.43	28.91½	32.46
May	15.73	14.44	18.81	29.28½	31.90
June	15.08	14.15	19.92	27.44	31.35
July	14.77	13.73	19.42	25.81	29.79
Aug.	15.79	12.68	17.47	26.58	28.75
Sept.	16.72	12.43½	17.76	27.86	*27.43
Oct.	16.81	11.66	17.92½	28.37½	†23.50
Nov.	15.90	11.93	18.86	31.71	
Dec.	14.82	13.16	20.37½	33.07½	
Av.	15.70	13.61	17.64	28.17	

Electrolytic Copper Prices.

Monthly average prices of Electrolytic Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.75½	14.45	13.71	24.10	30.26
Feb.	15.27	14.67	14.57	27.46	35.22
Mar.	14.92½	14.33½	14.96	27.44	35.74
Apr.	15.48	14.34	17.09	29.31	32.19
May	15.63	14.13	18.60	29.81	32.32
June	14.85	13.81	19.71	27.49½	32.57
July	14.57	13.49	19.08	25.60	28.90
Aug.	15.68	12.41½	17.32	27.36½	27.13
Sept.	16.55	12.08½	17.70½	28.26	*26.35½
Oct.	16.54	11.40	17.86	28.64	†23.50
Nov.	15.47	11.74	18.83	32.22½	
Dec.	14.47	12.93	20.35	33.84	
Av.	15.52	13.31½	17.47	28.46	

Casting Copper Prices.

Monthly average prices of Casting Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.57	14.27½	13.52	23.06½	28.04½
Feb.	15.14	14.48	14.17	26.03	31.73½
Mar.	14.76	14.18	14.34	25.90	32.18
Apr.	15.39	14.18	16.48	27.16	29.24
May	15.45½	14.00	17.41	27.37	30.11
June	14.72	13.65	18.74½	25.10	30.36
July	14.40½	13.34½	17.76½	23.61	27.59
Aug.	15.50	12.27	16.46	24.67	26.58
Sept.	16.37½	12.00	16.75	25.93	*26.23
Oct.	16.33	11.29	17.32	25.17	†23.50
Nov.	15.19	11.63	18.41	30.37½	
Dec.	14.22	12.83½	19.73	31.74	
Av.	15.33	13.18	16.76	26.51	

* Average of quotations to Sept. 20th inclusive; no market thereafter; † Government price.

Sheet Copper Price Changes.

The changes in the base price of sheet copper since April 26, 1916 are given below, with price of Lake Copper on same date.

1916—	Sheet Copper.	Lake Copper.
April 26	36.50	29.75
May 9	37.50	30.00
August 1	35.50	27.50
August 16	36.00	27.00
September 27	37.00	28.25
November 14	40.00	31.75
November 20	41.00	32.75
December 5	42.00	34.00
1917—		
February 19	44.00	35.25
April 10	42.00	33.75
April 23	40.00	30.75
June 14	38.00	31.50
June 19	39.00	31.75
June 20	38.00	28.50
July 26	36.00	29.00
September 7	35.00	27.50

Waterbury Copper Averages.

	1913.	1914.	1915.	1916.	1917.
Jan.	17.00	14.75	14.12½	24.75	32.25
Feb.	15.50	15.12½	15.25	27.75	35.25
Mar.	15.12½	15.00	15.75	28.00	35.50
Apr.	15.75	14.87½	18.50	29.00	30.75
May	15.87½	14.75	22.50	29.87½	32.00
June	15.37½	14.37½	22.50	28.25	32.50
July	14.75	14.12½	22.25	27.25	30.87½
Aug.	15.62½	13.00	19.50	27.00	29.00
Sept.	16.87½	12.87½	18.50	28.00	27.25
Oct.	16.87½	12.25	18.25	28.87½	27.00
Nov.	16.25	12.25	19.37½	33.25	
Dec.	15.00	13.50	20.75	34.25	

Av.	15.83	13.91	18.94	28.85½	
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Exports of Copper From the United States.

(In tons of 2,240 lbs.)

	1914.	1915.	1916.	1917.
January ..	36,018	26,193	23,663	*51,322
February ..	34,634	15,583	20,648	*32,265
March	46,504	30,148	26,321	*51,218
April	35,079	18,738	21,654	*49,536
May	32,077	28,889	16,062	*49,245
June	35,182	16,976	39,595	†41,177
July	34,145	17,708	35,066	*24,963
August	16,509	17,541	32,190	42,285
September ..	19,402	14,877	29,803	28,982
October	23,514	24,087	33,324	
November ..	24,999	24,168	22,598	
December ..	22,166	42,426	26,486	
Totals ..	360,229	276,344	327,310	71,293

* Exports to Canada included

Tin in October.

An Intolerable Shipping Situation—Much Indignation Expressed in the Trade—Continued Delay in Receipt of Cables—Market Active With Prices Here Up 5c Per Pound—London Up £13 to £16 on the Various Positions.

Among metal industries, the tin market was the only one that showed signs of genuine activity in October. After a very few days of dulness at the beginning of the month, when prices declined from 61.00c at the opening to the lowest point, 60.75c, inquiries for fairly large amounts quickly developed into sales at advancing prices. Continued delay in the receipt of cables from abroad, and the difficulties encountered in obtaining permits for shipments, however, combined in interfering with and restricting business transactions which easily could have been developed into a far larger number of sales.

Consumers were greatly disappointed as time passed, without apparent results being obtained from the efforts of the Tin Committee, which it was known had long since presented to the authorities at Washington, the facts relating to the deplorable British shipping regulations, which for months, had permitted the exploitation of American consumers to the unfair advantage of British exporters of, and speculators in tin. Notwithstanding these serious drawbacks, large transactions were accomplished in future positions but there was a dearth of business in spot tin, owing to the causes mentioned, which culminated in an acute shortage of spot metal in the closing days of the month, when prices which previously had fluctuated between 60.75c and 61.75c advanced sharply, until on the 30th, 66.00c per pound was registered, a net advance of 5.00c for the month as there was no change on the last day.

Total arrivals in October at Atlantic ports were 2,060 tons; 4,500 tons were reported to be afloat. The information which is usually published in regard to shipments from the Straits was not given out in September which accounts for the estimates that became necessary for the New York Metal Exchange to make in the statistics. Current rumors that such information was to be withheld—

probably another war measure which it is thought may safeguard metal and vessels—were confirmed when announcement was received that the Chamber of Commerce at Penang had been given orders by the British Government to that effect, on August 29th.

The foreign market fluctuated between £245 and £249 for spot Straits tin until the 29th, when a sharp advance began which culminated at £258 on the last day, a rise of £13 from the beginning of the month. The Singapore price, c.i.f. London equivalent, ranged within narrow limits, from £244 at the beginning down to £243 a few days later, and then advanced to £253 on October 30th, a net rise of £9 for the month. Spot standard ranged between £243 10s, October 1st, and 2nd, the lowest point and £249 until the 19th, then receded £2 during the following week, after which, the sharp advance to £257 15s on October 31st, was registered, making a net rise of £14 for the month. Future standard followed the range of spot metal, beginning at £241 and advancing to the same level with it by the 24th, after which, the two positions were identical in price, but the net rise for futures was, of course, higher, amounting to £16 for the month.

With the foreign market still reacting, the decline of 1¹/₂c per pound, here on the first day of the month, was to be expected but with the publication of tin statistics that were considered favorable, the position of the metal was strengthened. Banca tin and Chinese No. 1 were scarce and held at 59.50c and 56.00c respectively. With inquiries increasing for all kinds of tin and with fairly large sales being made—American consumption is large with plate mills running at full capacity—prices advanced, but the delay in receipt of cables retarded transactions in a most irritating way. The cheapest tin for future delivery from the Straits

Visible Supplies.

Visible supplies of tin at end of each month:

	1913.	1914.	1915.	1916.	1917.
Jan.	13,971	16,244	13,901	17,041	18,560
Feb.	12,304	17,308	14,548	16,511	19,927
Mar.	11,132	16,989	15,467	18,782	20,307
April	9,822	15,447	15,785	19,739	18,047
May	13,710	17,862	14,646	19,614	19,404
June	11,101	16,027	15,927	19,363	18,059
July	12,063	14,167	16,084	18,404	17,544
Aug.	11,261	14,452	15,127	18,042	20,353
Sept.	12,943	14,613	15,191	16,192	19,153
Oct.	11,857	10,894	13,154	17,415	18,927
Nov.	14,470	11,483	16,451	21,186	
Dec.	13,893	13,906	16,216	20,737	
Average	12,377	14,907	15,208	18,585	

Shipments From the Straits.

Monthly shipments of tin from the Straits Settlements to Europe and United States:

	1913.	1914.	1915.	1916.	1917.
Jan.	6,050	5,290	5,200	6,093	4,815
Feb.	4,660	6,520	5,584	6,250	6,255
Mar.	4,810	4,120	4,970	5,170	5,134
April	4,400	4,930	5,270	4,685	4,393
May	6,160	6,900	6,759	3,965	6,866
June	4,280	5,870	6,665	6,210	4,723
July	4,770	4,975	5,606	5,410	4,410
Aug.	6,030	3,315	4,712	4,526	5,770
Sept.	5,160	4,973	5,296	3,270	*5,000
Oct.	5,020	4,610	4,441	5,865	*5,000
Nov.	5,560	5,155	6,713	5,380	
Dec.	5,110	6,435	5,301	4,758	
Total	62,550	63,093	66,517	61,587	
Average	5,213	5,258	5,543	5,132	

* Estimated.

Consumption In the U. S.

Monthly deliveries of tin in the United States exclusive of Pacific Coast:

	1913.	1914.	1915.	1916.*	1917.*
Jan.	3,700	3,600	2,300	4,452	7,177
Feb.	3,500	3,300	3,375	6,383	3,930
Mar.	5,900	4,450	3,200	4,726	4,800
April	3,450	4,300	3,200	4,202	4,380
May	3,350	3,800	5,600	5,455	5,749
June	3,800	3,650	3,900	6,393	6,398
July	3,900	3,900	5,500	4,432	4,806
Aug.	3,600	2,900	4,500	4,335	2,305
Sept.	3,100	3,600	4,300	4,025	5,402
Oct.	3,700	3,700	4,000	4,556	4,669
Nov.	2,800	2,600	2,975	3,165	
Dec.	3,100	1,900	5,200	4,082	
Total	43,900	41,700	48,750	56,216	
Average	3,658	3,475	4,062	4,685	

Tin Statistics.

Compiled by New York Metal Exchange.
(Tons of 2,240 lbs.)

Shipments during	Oct. 1917.	Sept. 1917.	Oct. 1916.
Straits			
To Gt. Britain .	*2,300	*2,000	2,455
" Continent ..	* 500	*1,000	730
" U. S.	*2,200	*2,000	2,683
Total from Straits	*5,000	*5,000	5,868
Australia .....	.....	.....	100
Consumption			
London deliveries	1,523	1,584	1,208
Holland deliveries	90	79	109
United States ...	4,669	5,402	4,556
Total	6,282	7,065	5,873

Stocks at close of month

In London—			
Straits, Australian	4,900	2,294	2,858
Other kinds	915	917	887
In Holland .....	.....	.....	.....
In United States ..	1,657	2,397	3,410
Total	7,472	5,638	7,164

Afloat—

London	3,825	6,420	3,630
Banca & Billiton	1,870	1,920	2,194
United States ...	4,860	5,175	4,427

Total afloat

close of month .	10,555	13,515	10,251
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	Oct. 31, 1917.	Sept. 30, 1917.	Oct. 31, 1916.
Total visible supply	18,027	19,153	17,415
* Estimated.			

Straits Tin Prices In New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	50.45	57.24	34.30	41.88	44.19
Feb.	48.73	39.93	37.32	42.63	51.37
Mar.	46.88	38.08	49.93½	50.42	54.36
Apr.	49.12	36.10	47.98	51.75	55.91
May	49.14	33.30	38.78	49.15	63.29½
June	44.90	30.65	40.37	42.17	62.09
July	40.39	31.75	37.50	38.46	62.61
Aug.	41.72	50.59½	43.39	38.54	62.68½
Sept.	42.47	52.79	33.13	38.70½	61.68
Oct.	40.70	30.39½	33.08	41.16	61.85
Nov.	39.81	33.50	39.37½	44.17	
Dec.	37.64	33.60	38.75	42.66½	
Year	44.32	35.70	38.66	43.48	

was held at around 57.50c for May. As the month progressed, the demand for both future and spot deliveries increased. About the middle of the month, the Tin Committee sent out requests to importers asking for full particulars concerning all parcels of pig tin awaiting shipping permits, either in London or Singapore, to be immediately sent to Washington. This gave rise to the belief that the adjustment of permit regulations was at last fully under way between the United States and Great Britain.

The unsettled conditions, in regard to shipping and trade, existing between Holland and the United States occasioned much anxiety as to receipts of Banca and Billiton tin in the future and with supplies on hand already diminished, prices advanced to 64.00 to 64.50c by the end of the month.

Chinese No. 1 tin has come into considerable favor and the demand for this variety was constant all through the month, but offerings of future delivery were hard to obtain and spot metal grew very scarce. Prices advanced to 58.00c by the 25th. Lamb & Flagg, English 99% tin, at the same time, was held at 57.50c.

In the last few days, there was much excitement because of the new British shipping regulations which require that names of consumers must be given with orders and in lots of not less than 25 tons. Dealers and small consumers were in doubt as to obtaining necessary requirements under this law, and importers were reluctant to sell surplus stocks because of probable difficulty or the impossibility of obtaining further lots except on sales made previously to consumers. The new regulations benefit only the large consumers but it

is still believed that the Tin Committee eventually will be able to bring about an adjustment which will benefit the entire trade.

At the close of the month, conditions prevailing were considered intolerable and caused much indignation to be expressed in the trade. All prices were merely nominal, spot Straits 66.00c; Banca 64.50c; Chinese No. 1, 63.00c; English Lamb & Flagg 99% 63.00c; Future Straits were held at 58.50c and 59.50c with no offerings being made.

Tin Prices in October.

Day.	New York.	London.	
	Cents.	£	s d
1	61.00	243	10 0
2	60.75	243	10 0
3	60.87½	244	10 0
4	60.75	245	10 0
5	60.75	245	10 0
8	61.25	244	15 0
9	61.00	244	10 0
10	60.87½	244	10 0
11	61.00	245	15 0
12 .....	.....	246	10 0
15	61.25	247	0 0
16	61.12½	246	15 0
17	61.25	247	10 0
18	61.50	249	0 0
19	61.50	249	0 0
22	61.50	248	5 0
23	61.25	247	5 0
24	61.62½	247	15 0
25	62.00	247	10 0
26	63.00	247	15 0
29	64.50	250	10 0
30	66.00	256	5 0
31	66.00	257	15 0
High	66.00	257	15 0
Low	60.75	243	10 0
Average	61.85	247	8 6

Spelter in October.

**Spelter Industry Continues Very Unsatisfactory — Additional Closing
Down of Smelters Expected — Market Very Dull and Weak
With Prices Down About 1½c Per Pound.**

The discouraging conditions that characterized the spelter industry in September were emphasized during October extreme dullness marked by more or less weakness. The prospect of Government price-fixing for spelter in the not very near future—experience in other metals has demonstrated that investigation into costs of production by the Federal Trade Commission necessarily consumes much time increased the burden of uncertainty in the already anxious sentiment existing in the trade. Unsettled conditions, therefore, are likely to prevail for some time to come.

With the price of ore still held high, at \$55 to \$75 per ton, the costs of smelting are such as to render profits on the sale of spelter at to-day's prices too small to be attractive, or even worth while, and it is to be expected that there will be additional closing-down of smelting plants. Curtailment in the Kansas districts has already been severe. Where formerly 17 furnaces were in operation, now only four or five are running. Mid-year United States Geological statistics, however, revealed an increase in smelting capacity up to the end of June.

Inquiry was spasmodic throughout the month and for only small amounts. The galvanizing trade has diminished to small proportions and brass manufacturers seem to be in no immediate need of spelter, having covered their requirements for a year in advance. The sensational decline in prices of lead during the month was reflected sympathetically in spelter after a few days, but not to the extent that many expected, the decline being only fractional in spelter.

For the entire month, there was a total recession from 8.37½c, New York on October 1st, to 7.80c at the close and from 8.20c at the beginning, to 7.62½c East St. Louis, October 31st. Future positions remained firm, throughout the month, at 1½ to 1c premiums over the

earlier deliveries. Brass special was held at 8.50 to 8.62½c at the beginning of the month and at the close was offered at 8.12½c while intermediate and high grades of spelter ranged throughout the month at from 10.50c to 13.50c according to brand and quality.

The lack of consuming demand early in the month, was notable, because, ordinarily at this season of the year, buying is in satisfactory volume. That a decline in prices should ensue, was natural, but when combined with free offerings at concessions from the opening, 8.20c St. Louis basis to 8.00 to 8.12½c for October and November and 8.12½c for December, there was some surprise expressed at the dearth of response from buyers. The trade also

Spelter Prices in October.

Day.	New York.	St Louis.	London.		
	Cents.	Cents.	£	s	d
1	8.37½	8.20	54	0	0
2	8.32½	8.15	54	0	0
3	8.23½	8.06¼	54	0	0
4	8.23½	8.06¼	54	0	0
5	8.23½	8.06¼	54	0	0
8	8.17½	8.00	54	0	0
9	8.17½	8.00	54	0	0
10	8.30	8.12½	54	0	0
11	8.30	8.12½	54	0	0
12	.....	.....	54	0	0
15	8.30	8.12½	54	0	0
16	8.23½	8.06¼	54	0	0
17	8.17½	8.00	54	0	0
18	8.17½	8.00	54	0	0
19	8.17½	8.00	54	0	0
22	8.11½	7.93½	54	0	0
23	8.05	7.87½	54	0	0
24	7.92½	7.75	54	0	0
25	7.92½	7.75	54	0	0
26	7.92½	7.75	54	0	0
29	7.80	7.62½	54	0	0
30	7.80	7.62½	54	0	0
31	7.80	7.62½	54	0	0
High	8.37½	8.20	54	0	0
Low	7.80	7.62½	54	0	0
Average	8.12½	7.95	54	0	0

Spelter Prices in St. Louis.

Extreme price fluctuations of Prime Western Spelter, East St. Louis delivery, by months and years.

	1914			1915			1916			1917		
	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.
Jan.	5.25	5.10	5.14	7.62½	5.55	6.33	19.25	17.12½	18.01	10.87½	9.00	9.82
Feb.	5.35	5.20	5.27	10.00	7.65	8.62	21.00	18.50	19.92	10.75	9.37½	10.32
Mar.	5.22½	5.12½	5.15	11.00	8.87½	9.80	20.62½	16.25	17.91½	10.87½	10.37½	10.65
April	5.12½	4.85	5.03	14.00	9.25	11.22	19.25	17.50	18.44	10.50	8.75	9.55
May	5.00	4.90	4.96	21.00	13.00	15.52½	17.75	13.12½	15.75½	9.50	9.12½	9.30½
June	4.97½	4.82½	4.93	27.00	17.50	22.14	13.87½	10.87½	12.62	9.50	9.00	9.28
July	4.95	4.80	4.84	22.75	17.75	20.53	9.75	8.20	8.92	9.00	8.25	8.64
Aug.	6.00	4.70	5.45	18.00	10.75	14.19	11.00	8.62½	9.52½	8.62½	7.75	8.30
Sept.	5.85	4.95	5.33	15.25	13.37½	14.10½	9.62½	8.50	9.06	8.25	7.87½	8.09
Oct.	5.00	4.60	4.81	14.62½	13.25	13.89	10.47½	9.25	9.83	8.20	7.62½	7.95
Nov.	5.20	4.80	4.97	19.00	14.37½	16.87½	13.12½	10.25	11.75			
Dec.	5.65	5.20	5.49	18.00	14.75	16.72	13.12½	9.62½	11.11			
Year	6.00	4.60	5.11½	27.00	5.55	14.16	21.00	8.30	13.57	10.87½	7.62½	9.19

* Ten months.

Spelter Prices in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	7.23	5.33	6.52	12.18½	9.97
Feb.	6.49	5.46	8.86½	20.09	10.49
Mar.	6.29	5.35	10.12½	18.10	10.82½
April	5.79	5.22	11.51	18.61½	9.73
May	5.51	5.16	15.82½	15.93	9.48
June	5.23½	5.12	22.62½	12.80	9.45
July	5.41	5.03	20.80	9.70	8.82
Aug.	5.80	5.63	14.45	9.10	8.48
Sept.	5.83	5.52	14.49	9.23½	8.26½
Oct.	5.47	4.99½	14.07	10.01	8.13
Nov.	5.34	5.15	17.04	11.92½	
Dec.	5.22	5.67	16.91	11.28½	
Av.	5.80	5.30	14.44	13.75	

Waterbury Spelter Averages.

	1913.	1914.	1915.	1916.	1917.
Jan.	7.56	5.54	6.55	22.25	13.05
Feb.	6.81	5.70	11.85	22.70	13.80
Mar.	6.56	5.59	12.15	23.15	13.45
April	6.08	5.50	13.85	23.20	11.85
May	5.77	5.38	20.55	21.20	11.05
June	5.50	5.37	25.60	17.40	10.85
July	5.61	5.26	24.90	15.20	10.55
Aug.	5.99	5.66	19.30	13.60	10.05
Sept.	6.13	5.91	17.85	13.70	9.80
Oct.	5.74	5.23	16.85	12.95	9.75
Nov.	5.60	5.38	19.36	14.10	
Dec.	5.44	5.90	21.15	13.20	
Average	6.06½	5.53½	17.50	17.72	

Sheet Zinc Price Changes.

The following table gives the changes in the base price of sheet zinc since June 27, 1916; together with the price of spelter ruling on the same day.

	Spelter	Sheet Zinc
1916—	St. Louis.	
June 27	18.00	11.37½
July 6	17.00	9.37½
July 11	15.00	8.62½
October 26	16.00	10.12½
November 10	17.00	11.12½
November 17	18.00	12.00
November 20	19.00	12.12½
November 24	20.00	12.87½
November 24	21.00	12.87½
April 25	20.00	8.87½
April 26	19.00	9.00

Exports of Domestic Spelter and Sheets---Short Tons.

	1916		1917	
	Tons.	Value.	Tons.	Value.
Jan.	10,483	\$3,601,970	15,351	\$4,455,110
Feb.	10,328	3,638,003	15,551	3,933,047
Mar.	8,171	2,902,472	17,408	4,927,420
April	9,133	3,461,914	12,675	3,327,809
May	8,583	3,093,620	19,528	4,758,793
June	11,309	4,036,656	13,095	3,280,111
July	12,708	4,230,805	8,863	2,219,420
Aug.	18,661	5,549,581	11,283	2,871,208
Sept.	19,255	5,150,808		
Oct.	19,994	5,758,357		
Nov.	18,991	5,291,493		
Dec.	15,652	4,774,158		
Total	133,268	\$51,489,837		

was hampered by uncertainty in regard to Government requirements, and one or two large producers announced they were out of the market until such information was forthcoming. On the 9th, the largest business of the month was transacted at from 8.00 to 8.12½c East St. Louis, for October, November and December shipment.

The important point in the half year's statistics was, increased capacity for smelting, to double the number of retorts available when the war began. Production of spelter, however, is estimated to have decreased, notwithstanding the greater facilities—600,000 tons at present, against 720,000 tons during

the first half of 1917. Stocks at the end of September were 50,000 tons against 33,000 tons June 30th. As the month progressed, the market was practically at a standstill, a few inquiries from consumers were noted in the third week, but if any buying resulted it was of small amounts. One bright spot pointed out, was the price of sheet zinc which has been maintained at the 19c base, for months past—this branch of the industry is in favorable condition, at least.

After the last drop in lead on the 24th, the spelter market weakened and failed to rally as did lead, in the last few days, but closed quiet.

Lead in October.

Market Weak and Demoralized the Greater Part of October — Trust Price Reduced 2½c Per Pound — Market Closes Firmer With Outside Market ½c Higher Than Trust Level.

The lack of confidence noted in the lead industry, that was the feature of the market in September, was followed by weakness and dullness in October, that resulted by the 24th, in a total reduction of 2½c per pound—made at three different times—from 8.00c at the beginning of the month to 5.50c in the official base price of the American Smelting & Refining Company. This was exactly one-half the figure—11c per pound—which the "Trust" had maintained from June 8th, to August 29th, a period but little short of three months. The first and second reductions failing to develop buying interest, the independent producers, each time, made offerings below the level of the base established by the leading producer, in their effort to stimulate interest into actual transactions but the business placed continued to be upon a limited scale that was most discouraging.

The reason assigned for the depression was attributed to the expected price-fixing by the Government that would materially reduce it from 8.00c, the figure established by the Government in June. The investigation into costs of production by the Federal Trade Commission having been completed, the result of the findings was

forecast in the concession made by the producers to the Government on outstanding contracts, in the agreement that the Government should share in the full benefit of any decline from the fixed price in the open market.

Following the third reduction made by the "Trust", it was not necessary for the independent producers to cut under because consumers and dealers almost immediately entered the market and business activity of so satisfactory a kind developed that prices advanced 1c per pound to 6.00c for all deliveries with the usual differential for E. St. Louis. The total decline for the month was 2c per pound, from 8.00c October 1st to 6.00c on the last day. Lead ore dropped from \$90 to \$60 per ton, on the maximum base price.

On October 1st, the market was reported steady at the "Trust" price established September 18th, but as the days succeeded each other and no business was done, the usual differential between New York and St. Louis became wider; supplies in the West being larger than those here. On the 8th, producers voluntarily released the Government from its contract to pay 8.00c East St. Louis basis, for October requirements giving it the benefit of

lower prices should such be established in the open market, and suggesting that the average prices as given in the Engineering & Mining Journal be used as a basis of settlement since many lead producers are under contract to accept lead ore at the price given by this trade authority.

The market continued so dull that concessions were freely offered—with-out affecting sales, however—and with lead ore reduced \$10 per ton the trade expected the "Trust" reduction to 7.00c which occurred on the 11th. Business continued to be done in only small amounts, and by the 16th, offerings at further concessions were again being freely made. Statistics had proved that production was in excess of demand. Misrepresentation of requirements, it was said, had been made by consumers who had feared a shortage. Government needs, also, it was found, were not so large as had been anticipated.

Another reduction, this time $\frac{1}{2}$ c per pound, in the base price of the leading producer brought the figure to 6.50c, on the 18th of the month and the market was reported to be in a panicky condition. Again buyers failed to respond with orders and a week later, a drastic cut brought the base price of the American Smelting & Refining Company at 5.50c per pound. This was $\frac{1}{8}$ to $\frac{1}{4}$ c under the concessions that independents had been offering since the 6.50c per pound price has been established. The market was reported to be in a demoralized condition but immediately following buying developed and large-

er sales were made, the volume of business increased each day, strengthening the market which closed firm with advanced prices in the outside market, 6.00c New York; 5.75 to 5.87 $\frac{1}{2}$ c St. Louis. The "Trust" price remained 5.50c New York.

Lead Prices in October.

Day.	New York* St. Louis.		London.	
	Cents.	Cents.	£	s d
1	8.00	7.92 $\frac{1}{2}$	30	10 0
2	8.00	7.92 $\frac{1}{2}$	30	10 0
3	8.00	7.86 $\frac{1}{4}$	30	10 0
4	8.00	7.80	30	10 0
5	8.00	7.75	30	10 0
8	8.00	7.75	30	10 0
9	8.00	7.70	30	10 0
10	8.00	7.62 $\frac{1}{2}$	30	10 0
11	8.00	7.56 $\frac{3}{4}$	30	10 0
12 .....	.....	.....	30	10 0
15	7.00	6.92 $\frac{1}{2}$	30	10 0
16	7.00	6.81 $\frac{1}{4}$	30	10 0
17	7.00	6.75	30	10 0
18	7.00	6.75	30	10 0
19	6.50	6.40	30	10 0
22	6.50	6.25	30	10 0
23	6.50	6.25	30	10 0
24	5.50	5.42 $\frac{1}{2}$	30	10 0
25	5.50	5.42 $\frac{1}{2}$	30	10 0
26	5.62 $\frac{1}{2}$	5.42 $\frac{1}{2}$	30	10 0
29	5.75	5.52 $\frac{1}{2}$	30	10 0
30	5.75	5.58 $\frac{3}{4}$	30	10 0
31	6.00	5.81 $\frac{1}{4}$	30	10 0
High	8.00	7.92 $\frac{1}{2}$	30	10 0
Low	5.50	5.42 $\frac{1}{2}$	30	10 0
Average	6.98	6.78	30	10 0

* Outside market.

Lead Prices in New York.

Based on American Smelting & Refining Company's quotations on 50 ton lots.

	1913.	1914.	1915.	1916.	1917.
Jan.	5.35	4.11	3.74	5.94	7.81
Feb.	4.35	4.06	3.82	6.23	8.34
Mar.	4.35	3.97	4.03	6.83	8.98
April	4.40	3.82	4.20	7.50	9.00
May	4.36	3.90	4.23 $\frac{1}{2}$	7.50	9.71
June	4.35	3.90	5.87 $\frac{1}{2}$	7.02	10.76
July	4.37	3.90	5.74	6.54	11.00
Aug.	4.63	3.90	4.75	6.25	10.94 $\frac{1}{2}$
Sept.	4.75	3.86	4.62	6.75	8.96
Oct.	4.45	3.54	4.59 $\frac{1}{2}$	7.00	6.85
Nov.	4.34	3.68	5.15	7.00	
Dec.	4.06	3.80	5.34 $\frac{1}{2}$	7.44	
Av.	4.40	3.87	4.67 $\frac{1}{2}$	6.83	

Aluminum and Silver Prices.

	New York			
	Aluminum.		— Silver —	
	1916.	1917.	1916.	1917.
Jan. ...	54.33	60.00	56.77 $\frac{1}{2}$	75.63
Feb. ...	57.50	58.05 $\frac{1}{2}$	56.75 $\frac{1}{2}$	77.57
Mar. ...	60.25	59.23	57.93 $\frac{1}{2}$	73.86
April ...	60.00	60.00	64.41 $\frac{1}{2}$	73.88 $\frac{1}{2}$
May ...	60.00	60.00	74.27	74.74 $\frac{1}{2}$
June ...	62.09	59.85	65.02 $\frac{1}{2}$	76.93 $\frac{1}{2}$
July ...	60.15	54.33	62.94	79.01
Aug. ...	59.48	48.48	66.08	85.41
Sept. ...	61.90	42.60 $\frac{1}{2}$	68.51 $\frac{1}{2}$	100.74
Oct. ...	64.55	38.59	67.85 $\frac{1}{2}$	87.33
Nov. ...	64.90		71.60	
Dec. ...	63.40		75.76 $\frac{1}{2}$	
Average	60.73		65.66	

Lead Prices in St. Louis.

Extreme fluctuations of Soft Missouri Lead in St. Louis.

	1914			1915			1916			1917		
	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.
Jan.	4.10	3.95	3.99½	3.65	3.50	3.57	6.00	5.45	5.80	8.25	7.30	7.58
Feb.	4.10	3.85	3.95	3.80	3.62½	3.72	6.37½	6.00	6.17	10.00	8.00	9.04
Mar.	3.87½	3.65	3.83½	4.12½	3.82½	3.98	8.25	6.40	7.46	10.00	9.25	9.53
April	3.80	3.65	3.70	4.15	4.07½	4.11	8.12½	7.32½	7.67	9.75	9.00	9.26
May	3.82½	3.77½	3.81	4.45	4.10	4.16	7.45	7.10	7.28	11.50	9.75	10.52
June	3.82½	3.77½	3.80	7.50	4.80	5.76	7.20	6.62½	6.77	12.00	11.00	11.71
July	3.77½	3.72½	3.75	5.67½	5.30	5.52	6.67½	6.00	6.20	11.37½	9.75	10.66
Aug.	3.75	3.70	3.73½	5.20	4.30	4.59	6.75	5.75	6.19	10.87½	10.25	10.59
Sept.	3.75	3.55	3.67	4.82½	4.35	4.53	6.95	6.50	6.71	10.25	7.92½	8.82
Oct.	3.55	3.35	3.39½	4.82½	4.40	4.51½	6.90	6.85	6.87½	7.92½	5.42½	6.78
Nov.	3.82½	3.37½	3.58	5.22½	4.82½	5.08	7.25	6.85	6.96			
Dec.	3.70	3.60	3.67	5.42½	5.10	5.26½	8.00	7.20	7.53			
Year	4.10	3.35	3.74	7.50	3.50	4.57	8.25	5.45	6.80	*12.00	*5.42½	9.45

* Ten months.

Aluminum, Silver, and Antimony
Prices in October.

New York

Aluminum. Silver. Antimony.

Day.	Cents.	Cents.	Cents.
1	40.00	95½	15.25
2	40.00	93½	15.25
3	40.00	93½	15.25
4	40.00	92½	15.12½
5	40.00	91½	15.00
6		90½	
8	40.00	90½	15.00
9	40.00	89½	15.00
10	39.00	88½	14.87½
11	39.00	88½	14.87½
13		86½	
15	38.00	86½	14.87½
16	38.00	85½	14.87½
17	38.00	84½	14.75
18	38.00	84½	14.62½
19	38.00	83½	14.62½
20		83½	
22	38.00	83	14.50
23	38.00	82½	14.25
24	38.00	82½	14.12½
25	38.00	82½	14.12½
26	38.00	82½	14.12½
27		82½	
29	37.00	81½	14.00
30	37.00	90½	14.00
31	37.00	90½	14.00
High	41.00	95½	15.37½
Low	36.00	82½	14.00
Average	38.59	87.33	14.66

Imports of Aluminum.

(In tons of 2,000 lbs.)

	1913.	1914.	1915.	1916.	1917.
Jan.	1,590	616	636	425	1
Feb.	996	645	291	324	14
Mar.	1,007	741	383	223	2
April	1,773	678	153	406	3
May	1,169	586	209	696	none
June	880	548	893	325	6
July	1,216	709	356	208	1
Aug.	668	736	245	106	0
Sept.	529	636	521	12	
Oct.	560	1,283	93	247	
Nov.	528	406	61	348	
Dec.	677	516	426	4	
Total	11,593	8,090	4,267	3,324	27

Exports of Domestic Lead.

(In tons of 2,000 pounds.)

	1916	1917
Jan.	7,192	\$790,447
Feb.	10,246	1,392,624
Mar.	8,385	1,068,459
April	5,870	857,095
May	7,568	1,027,273
June	7,167	1,062,616
July	9,008	1,276,316
Aug.	7,542	995,724
Sept.	15,633	2,012,413
Oct.	9,296	1,303,934
Nov.	6,402	887,429
Dec.	5,800	871,875
Total	100,165	12,598,266

Mid-Year Spelter and Lead Statistics

(SPELTER)

Statistics of Primary Spelter, 1913-1917, by Six-month Periods.
(From the United States Geological Survey)

(In tons of 2,000 Pounds).

	—1914—		—1915—		—1916—		1917.
	1st half.	2nd half.	1st half.	2nd half.	1st half.	2nd half.	1st half.
Supply:							
Stock at beginning	40,659	64,039	20,095	5,884	14,253	23,879	17,598
Production—							
From domestic ore ..	171,496	171,922	207,634	250,301	267,696	295,755	311,559
From foreign ore ...	3,562	6,060	8,898	22,486	48,756	55,249	49,599
Imports	506	374	489	415	464	220	156
Total available	216,223	242,404	237,116	279,286	331,169	375,103	378,872
Withdrawn:							
Foreign exports	2,048	8,513	5,959	8,016	20,197	23,033	30,691
Domestic exports	824	63,983	64,368	54,235	58,007	105,130	93,660
Stock at close	64,039	20,095	5,884	14,253	23,879	17,598	33,147
Total withdrawn ..	66,911	92,591	76,211	76,504	102,083	145,761	157,438
Apparent consumption.	149,312	149,813	160,905	202,782	229,086	229,342	221,434
Spelter made in:							
Illinois	62,062	65,884	74,982	84,976	90,082	91,351	95,149
Kansas	23,737	20,773	35,247	66,176	74,592	66,694	42,359
Oklahoma	45,443	45,924	51,172	58,036	73,298	94,908	109,130
All other States	43,816	45,410	55,131	63,799	78,480	98,051	114,500
	175,058	177,991	216,532	272,987	316,452	351,004	361,138
Zinc ore imported	9,052	22,910	66,683	92,169	231,845	154,119	142,179
Zinc content	2,949	9,183	23,997	33,672	93,907	54,240	48,959
Zinc ore exported	6,042	3,069	678	154	34	44	36

(LEAD)

The following statistics of primary refined pig lead were collected by Mr. C. E. Siebenthal of the U. S. Geological Survey:

(In tons of 2,000 pounds)

	1914.	1915.	1916.	1917. first half.
Production:				
Domestic desilverized (soft excluded)	311,060	301,564	316,469	152,231
Domestic soft (desilverized soft included).	201,725	205,462	236,759	124,292
Foreign desilverized	29,328	43,029	18,906	29,539
	542,122	550,055	571,131	306,062
Imports (partly old lead)	148	410	5,655	1,467
	542,270	550,465	576,789	307,529
Exports of domestic lead	58,722	88,306	100,565	29,241
Exports of foreign lead:				
From bonded warehouse	21,545	38,618	9,880	6,066
In manufactures, under drawback	9,506	3,983	5,171	3,227
	89,773	130,907	115,616	38,534
Available for consumption	452,497	419,558	461,173	268,995
Production of primary antimonial lead	16,667	23,224	24,038	7,822
Production of secondary antimonial lead ..	1,300	2,866	4,130	1,959
Production of secondary pig lead at regular ore smelters	9,880	7,968	11,097	7,578

The Page Woven Wire Fence Company, Adrian, Mich., and Monessen, Pa., which has been doing business under that name for 30 years, has announced a change in its corporate title, effective October 22, to the Page Steel & Wire Company. The announcement says that the change in name involves no change in attitude toward any of the old lines of production, but has been decided upon because of expansion of the company's business in such a way that the old name has been outgrown and is a misfit. The parent business of the company was wire fencing, but it has developed other products, among them wire rods, rope wire and spring wire, and it also has made arrangements with the American Rolling Mill Company, Middletown, Ohio, and the Copper Clad Steel Company, Pittsburgh, for the exclusive sale of iron and steel wire manufactured by these companies. The Page Steel & Wire Company announces also the opening of an office in the Union Arcade, Pittsburgh, in charge of E. C. Sattley, general manager.

The New York Signal Company, New York, has been incorporated with a capital of \$12,000 to manufacture signal apparatus for automobiles. F. J. Benitoa, C. J. and J. R. Avellanal, 111 West 69th street, are the incorporators.

The Heating Specialty Company, Ltd., Toronto, has been incorporated with a capital stock of \$50,000 by James Parrish, William A. Ross, Harry W. Page, 12 Richmond Street East, and others, to manufacture stoves, grates, furnaces, boilers, gas and electric heaters, etc.

The U. & J. Carburetor Company, Chicago, has been incorporated in Delaware with a capital of \$250,000 to manufacture carburetors. Frank A. Urwan, J. W. Johnson and George E. Brannan, all of Chicago, are the incorporators.

The Railway & Power Engineering Corporation, Ltd., Toronto, has been incorporated with a capital stock of \$50,000 by Theodore Mahm, 55 Kingswood Road, Gerard Ruel, 127 Isabella street; Frederick C. Allen and others, to manufacture machinery, tools, etc.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., required by the act of Congress of August 24, 1912 of the STEEL AND METAL DIGEST, published monthly at New York, N. Y., for October 1, 1917.

State of New York, County of New York: Before me, a Notary Public in and for the State and County aforesaid, personally appeared C. S. Trench, who, having been duly sworn according to law, deposes and says that he is the Editor of the Steel and Metal Digest, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, circulation, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Name of—	Post Office Address.
Publisher, American Metal	

Market Co.,	81 Fulton St., N. Y.
Editor, C. S. Trench ..	81 Fulton St., N. Y.
Managing Editor,	

C. S. J. Trench	81 Fulton St., N. Y.
Business Manager,	

A. R. Trench	81 Fulton St., N. Y.
--------------------	----------------------

2. That the owner's name, and the names and addresses of stockholders owning or holding 1 per cent. or more of the total amount of stock are:

American Metal

Market Co.,	81 Fulton St., N. Y.
C. S. Trench	81 Fulton St., N. Y.
C. S. J. Trench	81 Fulton St., N. Y.

3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent. or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also in cases where the stockholders or security holders appear upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him. (Signed) C. S. Trench, Editor.

Sworn to and subscribed before me this second day of October, 1917.

(Seal) John Bowen,
Notary Public, Kings County.
Ctf. filed in New York County.
(My commission expires March 30, 1918.)

Antimony in October.

**Market Very Dull All Through October—Prices Off 1½c Per Pound—
1916 Production Shows Increase of 1,378 Tons Over 1915.**

The antimony market was lifeless and wholly lacking in interest in October. Efforts were made to stimulate buying by offerings at concessions in prices but they were unavailing and served rather to weaken the market than otherwise. The decline in prices, which began early in the month, continued at intervals, due to the lack of demand, dropping fractionally each time, from 15.12½ to 15.37½c for prompt and October, duty paid, at the beginning, to 14.00 to 14.25c for the same positions by the 24th, after which there was no change. October shipments from the Orient which were held at 14.00c in bond through the first

half of the month, also declined, later, to 13.00c per pound in bond.

The United States Geological Survey statistics for 1916 reported production of 4,480 tons, representing an increase of 1,378 tons over production in 1915. It is interesting to compare fluctuations in prices during 1917, which ranged from the highest point, 36.00c per pound in March and April, and to the lowest point, 14.00c in September and October—a variation of 22c per pound—with the corresponding ten months of 1916, when the highest point, 45.00c per pound was registered in February and March and the lowest, 10.50c, in August, a range of 34c per pound or 12c greater than the range this year.

Aluminum in October.

Market Dull and Weak—All Grades Off 5c Per Pound.

The aluminum market in October, opened with a 1c per pound decline on all varieties, from the September closing prices, to 39.00 to 41.00c for No. 1 Virgin 98-99%; 37.00 to 39.00c for pure 98-99% remelted and 29.00 to 31.00c for No. 12 alloy remelted. Domestic consumers were reported to be well supplied with metal and the export business was at a standstill. With an entire absence of buying in the first ten days and with offerings being freely made at concessions, in 50 to 100-ton lots, from these prices, another 1c per pound decline was registered. No improvement in conditions had developed when on the 15th, another decline occurred. On the 29th prices were re-

duced to 36.00c to 38.00c for No. 1 Virgin; 34.00c to 36.00c for 98-99% pure remelted; 26.00c to 28.00c for No. 12 alloy remelted, and a sale of spot metal was reported at 36.00c f.o.b. Western shipping point. The total recession for the month was 5c per pound on all kinds alike.

The range of prices in the first ten months of 1917 has been 28c per pound, from 64c the highest point reached in January to 36.00c the lowest point, which was reached this month, as compared with 1916 when the range was only 13c, from the lowest point point 53c in January to the highest point, 67.00c in October.

STEEL AND METAL DIGEST

EDITORS

C. S. TRENCH

B. E. V. LUTY

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NO. 12

America's Part in the War

The developments of the war during the past month have all been in the direction of increasing the importance of our country in the part it must play. Our enemy has shown great strength, and is evidently making a supreme ef-

fort to win the war before the man strength of America can be effective against them, and have been aided by what are nothing short of disasters to the Allied cause, the collapse of Russia and the Italian defeat. We doubt if it is fully realized how great the Italian disaster is to the Allied cause, not from the fact that Italy after being defeated, is now invaded, not that a large proportion of what seemed a good fighting force have been out-generaled and captured, but that with it has followed an enormous loss of guns and ammunition, and a severe blow to the morale of that nation. Instead of Italy being an aid to the Allies, she now needs their help and assistance. Russia, who was depended upon to supply the great man power, and to hold half the Germany army, now presents the greatest danger, as under the leadership of a handful of anarchistic socialists has stopped fighting and is in a state of chaos. The most that can be expected now in Russia is Civil War, and in time the Government being taken over by strong hands, and the restoration of some kind of order. Russia is out of the war as far as being an aid to the Allies, for at least another year, and may become a means to supply our enemies with men, food and other supplies. This suggestion is not so fanciful as some may think. German armies and German officials may soon be organizing Western Russia, bringing order out of chaos for the advancement of their own cause, while the other parts of that great country break up into separate governments of little

**We Wish All Our Readers
A MERRY CHRISTMAS**

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fighting value to our cause. We must recognize plainly that the situation in the Eastern theatre has brought about a very decided change in the strategic possibilities of the military situation on the Western front. The present German thrust is the most powerful blow aimed at the British during the past two years, coming as it did immediately after the British victory in the same area, and serves to emphasize the reviving strength of the Germans in the West. Germany by leaving only skeleton divisions in the Russian area and by concentrating all available guns, munitions and men in the theatre of operations in the West has been able to mass a relatively greater force than she has ever been able to mobilize in France in the past.

Why do we lay such stress on all this? Because it plainly indicates that the war is to be won on the Western front and not so much by economic power, but by hard physical fighting; because it means a long war if the morale of the German nation remains unbroken, and a further sacrifice of human life perhaps as great as the three years that have gone before; because it means that our man power and economic power must be employed to its fullest extent, and because it is to America that the Allies must look to supply the depletion of their ranks and the exhaustion of their economic powers.

The situation under which we enter will increase our power to shape the future destiny of the world, and to make us the leader in the reconstruction of the world's political future based on the ideals we stand for. But to win this great privilege we must prove we have earned the right, and this can only be accomplished by what we do in the meantime. The developments in Russia are also a challenge to America to save democracy in that and other countries, and to do it we must win the war. Thus there falls on our own Government and every individual in the country a great and sacred obligation, a task that will tax every power, physical and spiritual, we possess, and to this we are now beginning to devote our energies.

Our ideals have been eloquently stat-

ed by our leader, the President, and superhuman efforts are being made by the authorities at Washington to co-ordinate our powers, in order to throw them efficiently into the contest. But every individual must be in it, and the part we can play is as follows:

Supreme loyalty to our Government and willingness to travel any path they lead us. There is no doubt as to how we will respond in this point, but there are other virtues we must learn and employ and which will come harder.

The war must possess us body, soul and spirit—everything must be made subservient to winning it. We are willing at the command of our Government to give our sons and therefore, how much more willing to give of our wealth, our time, our pleasures, in fact, all we possess if necessary.

Every business man, every worker, must not only arrange his business and his work to the line of conduct laid out for him by our leaders, but added to it must be the arrangement of his personal affairs and conduct and those things the Government does not touch. If we cannot deny ourselves non-essentials and save the money that we would spend on them for the use of our country we are poor citizens. Why should we have the comforts and the ease and money to spend on these things with almost the entire rest of the world in misery, and in many cases in dire want. The claim that some employers of labor are making fortunes by the war is not true now that we are in it. The rich and the well-to-do are paying the money cost of the war, not the rank and file of the nation. The present mode of taxation makes it so. How absurd the idea that it was the "money bags" that drove us into the war. Already in every direction we see the evidence that capital is unable to continue the development of new enterprises, or the full maintenance of going enterprises, for the reason that the cost of the war needs not only all savings and surplus, but makes demand for a large part of our capital. The profiteering that is going on to-day is with the smaller distribution of commodities and the labor unions. In time the necessities for sacrifice and for thrift will reach the masses. If they don't participate

willingly now, they will have to later on by the conditions that their present failure will create.

Does all this mean decreased prosperity? Why of course, it does. How can we expect prosperity with ourselves now a part of the awful disasters of this war. Of course, extraordinary activity is certain in all lines of business that enter into supplying the needs of the war, but the Government will see to it that Uncle Sam is not exploited.

Business in non-essentials and luxuries will be curtailed and speculation will be curbed. Hard work, thrift, and co-operation with the program laid out for our conduct by our Government and inspired by patriotism can alone bring us victory.

The producing power of every man that is drafted into the army or navy is lost, and must be provided for by harder work and longer hours of work by those who remain at home. Every industry and every individual engaged in munitions and other war supplies that would not be made in peace times, is lost to the production of the ordinary requirements of the country. The enormous economic waste must be made up by thrift and hard work and longer working hours by those who remain behind. We are feeling this already, although what we will have to do has

only been begun. For labor under these conditions to insist on shorter hours or even an eight-hour day is a crime. How many hours a day does our President work and those directing the war? How about those who are in the field? But this conduct of labor cannot come with compulsion—it must come through patriotism. God help us if it is not forthcoming. Think of those who for a pittance of pay are fighting to preserve our lives and liberties, and then think of the miserable selfishness of those, who already getting more than they got before, are trying to work less and are demanding more money. What for? To live better than they did before? Why should they live better?

The scars and losses of this war are going to be carried on our pocketbooks and on our hearts for a generation. The children of to-day will grow up under the great shadow of the disaster that is raging, long after the war is ended. Let us try and bring the disaster to a finish by throwing at once our whole powers, physical, mental and spiritual, into the contest to end it.

Our business, our workshop, our money, our brains, energies and every power we possess as a country and as individuals must be devoted to the supreme efforts of winning the war. Nothing else counts.

Business Trends.

Commodity Price Trend Still Upward

"While various propaganda are under way to reduce prices for commodities, the situation in general is characterized by remarkable strength," reports "Bradstreet's", which believes that as time passes, relief will be afforded as to prices for commodities, but thus far many small retailers "seem bent on charging all that the traffic will bear." Improvement, however, may be expected "as the power of the Government is extended". Uncontrolled commodities, in fact, "may eventually come under the influence of the Government". Already the Food Administration "seems bent on forcing speculators in foods to market their holdings even though losses may have to be accepted". For the present, however, prices in a collective sense "continue at inordinately high levels, a fact which goes far toward explaining much, though not all, of the unrest now visible in the field of labor". "Bradstreet's" index-number as of November 1, 17.0701, marks a new high record, though the change from October is only nine-tenths of 1%. At the same time the London Economist's index-number of English prices for the ending of October, 5.701 also shows a new high-water mark, the upward swing within a month's time having been 1.1%.

What the writer in "Bradstreet's" finds of immediate importance as regards movements in the United States is the fact that "foodstuffs have turned in a downward direction, and a similar statement also applies to metals and fuels". Textiles and oils, however, have ascended to "the highest levels ever reached within the life of our data, and at the same time hides and leather, as well as chemicals and drugs, reflect noteworthy strength". "Bradstreet's" present index-number shows a rise of 24.3% over January 1st last, of 33.3% over November 1st, 1916, of 64% over that date in 1915 and of 92.6% over the corresponding time in 1914, "when the purchasing power of

the people was curtailed as a result of widespread idleness, and when cotton, together with manufactured textiles, as well as iron and steel, were under the spell of arrested progress". Incidentally comparisons with November 1st, 1913 reveals an advance of over 71%.

The latest number of "Dun's Review", the other American authority on commodity prices has reached a record position also, being \$220.750. This compared with \$219.679 a month earlier and \$164.840 on November 1st, 1916, "when a sharp up-turn was witnessed" and the gain over the figure prevailing at the outbreak of the war, \$120.740 on October 1st, 1914 is now nearly 83%. Going back to the bottom point on its record, \$72.455 on July 1st, 1897, "Dun's Review" points out a similar difference of 205%.

A wide range of price movements is set forth in the following tables giving the monthly index numbers of the two American authorities:

"Bradstreet's":

	1913.	1914.	1915.	1916.	1917.
Jan.	9.4935	8.8857	9.1431	10.9163	13.7277
Feb.	9.4592	8.8619	9.6621	11.1415	13.9427
Mar.	9.4052	8.8320	9.6197	11.3760	14.1360
April	9.2976	8.7562	9.7753	11.7598	14.5769
May	9.1394	8.6224	9.7978	11.7485	15.1203
June	9.0721	8.6220	9.7428	11.6887	15.4680
July	8.9522	8.6566	9.8698	11.5294	16.0680
Aug.	9.0115	8.7087	9.8213	11.4414	16.3985
Sep.	9.1006	9.7572	9.8034	11.7803	16.6441
Oct.	9.1526	9.2416	9.9774	12.0399	16.9135
Nov.	9.2252	8.8620	10.3768	12.7992	17.0710
Average	9.208	8.903	9.853	11.825	15.301

"Dun's Review":

	1913.	1914.	1915.	1916.	1917.
Jan.	120.832	124.528	124.168	137.666	169.562
Feb.	119.728	121.641	125.662	142.260	176.273
Mar.	120.461	121.771	124.158	142.110	186.244
Apr.	119.217	119.791	125.090	145.690	190.012
May	118.324	118.230	126.649	146.197	208.435
June	120.050	121.096	125.992	145.397	212.585
July	116.319	119.708	124.958	145.142	211.950
Aug.	118.515	120.740	125.079	143.930	218.779
Sep.	122.053	126.975	124.684	152.018	215.010
Oct.	123.902	123.531	126.663	152.355	219.679
Nov.	125.503	124.340	130.467	164.840	220.750
Dec.	125.734	124.183	133.146	168.090	

Business Trends.

Small Increase in Iron Production

Pig iron statistics for November show unexpected though very slight increase in the daily rate. For the 30 days the total was 3,205,794 tons, or 106,859 tons a day, against 3,303,038 tons in October, or 106,550 tons a day. So much had been made of the banking down of furnaces at Youngstown last month, due to coke shortage, that a serious falling off was looked for. But other districts made up the loss, which turned out to be made only about 10% from the Youngstown output of October.

So many furnaces have been working badly, due to frequent bankings and in part to poor coke, that more are compelled to go out for relining. The net loss was 10 in November, and the 245 furnaces active December 1 had a capacity of 106,933 tons a day, against 109,059 tons a day for 355 furnaces on November 1. November just wiped out the October gain of 10 in active stacks.

The figures for the daily average production according to the "Iron Age" beginning January, 1914, are as follows (in tons of 2,240 pounds):

	1914.	1915.	1916.	1917.
Jan.	60,808	51,659	102,746	101,643
Feb.	67,453	59,813	106,456	94,473
Mar.	75,738	66,575	107,667	104,863
April	75,665	70,550	107,592	111,165
May	67,506	73,015	108,422	110,238
June	63,916	79,361	107,053	109,002
July	63,150	82,691	104,017	107,820
Aug.	64,363	89,666	103,346	104,772
Sept.	62,753	95,085	106,745	104,465
Oct.	57,361	100,822	113,189	106,550
Nov.	50,611	101,244	110,394	106,859
Dec.	48,896	103,333	102,293	.....

Output of Charters Makes Good Showing

Continued activity in the formation of new enterprises is apparent, although it is not as pronounced as it was in the recent past. Incorporations in the Eastern States with an authorized capital of \$1,000,000 last month represented a

total of \$285,590,000. While this total is smaller than in October by \$22,923,700, it is larger than in November a year ago by \$25,082,267. The grand total of all companies chartered with a capital of \$100,000 or over, covering the principal States, amounted to \$371,928,400, comparing with \$381,145,700 in October. In November a year ago the figures were \$275,668,800.

The past month's incorporations were again varied in character. The continued heavy output of new enterprises can be assigned in large part to the enormous Government war expenditures. Among the concerns that loom up most prominently in the returns are oil and gas, chemical, munitions and shipping, which contributed almost 50% of the grand total.

From an all-around viewpoint, the month's record is a noteworthy one in view of the high money rates that prevailed during a good part of the month, and also the unsatisfactory state of the market for high grade securities on the Stock Exchange.

Following are the comparative figures as specially compiled by The Journal of Commerce and Commercial Bulletin of companies incorporated in the Eastern States during the last three years, with an authorized capital of \$1,000,000 or more:

	1917.	1916.	1915.
Jan. \$244,450,000	\$270,995,000	\$51,150,000	
Feb. 283,815,000	366,995,300	53,950,000	
Mar. 281,000,000	194,750,000	70,050,000	
April 361,510,000	166,650,000	32,200,000	
May 388,481,000	209,735,000	78,950,000	
June 352,584,000	264,350,000	181,247,100	
July 416,350,000	217,662,500	71,100,000	
Aug. 382,100,000	113,472,000	67,100,000	
Sept. 202,500,000	164,700,000	286,625,000	
Oct. 308,513,700	303,768,700	208,695,000	
Nov. 285,590,000	260,407,800	190,075,000	
Total	\$3,506,893,700	2,438,396,300	1,291,142,100
Dec.	230,850,000	135,125,000	
Total	\$2,669,246,300	\$1,426,267,000	

The Set Prices for Iron and Steel

Announcements by War Industries Board and American Iron and Steel Institute.

At a meeting September 21, 1917, at Washington, between the War Industries Board and representatives of nearly all the iron and steel productive capacity of the United States it was decided that prices be set, and on the basis of "one price for all". The War Industries Board announced three batches of prices, respectively September 4th, October 11th and November 5th. An arrangement was made whereby prices for commodities not covered in these three announcements, as well as differentials, extras, etc., should be arranged and announced by the American Iron and Steel Institute. The War Industries Board's announcements will be given below, and afterwards the various announcements of the institute.

WAR INDUSTRIES BOARD PRICES

The prices represent recommendations made by the War Industries Board to the President, and approved by him, being announced at Washington as the result of a voluntary agreement between the board and the manufacturers. They are on the principle of "one price for all" in accordance with the doctrine urged by President Wilson in his "appeal" published July 12th. This principle is that when sales are made by the producers they shall be made at the same price to the Government, its Allies, and the general public. It does not carry with it an obligation to sell to the public at any specific time or for any specific period, but there is the understanding, really superfluous in fact, that the manufacturers make every effort to maintain production. "One price for all" is no new principle, representing in fact the general policy pursued by the large mills, and of course the blast furnaces, for many years. It was necessary to restate and adopt it, at this juncture, because otherwise there would have been a difference between prices charged the Government and prices charged the ordinary buyer.

Export sales of material not intend-

ed for war purposes are not governed by the set prices, but a measure of control, if indeed, is provided by the export licensing system. It is understood that licenses are not to be granted for the exportation of material intended for prosecuting the war unless the price does exceed that set.

The three price announcements by the War Industries Board are given below, with some general explanations, while further details are given in the Institute announcements, reproduced later.

September 24.

Lake Superior iron ore, the 1917 schedule of prices first promulgated late in 1916 for the 1917 season; Old range Bessemer, \$5.95, non-Bessemer, \$5.20; Mesabi Bessemer, \$5.70, non-Bessemer, \$5.05, at Lake Erie dock. It is understood that these are subject to modification according to any possible departure that may be made from the standard \$1 lake freight rate of the 1917 season.

Pig iron, \$33. The initial understanding was that this should apply to basic and No. 2 foundry iron at valley furnaces. By open market sales and by formal announcement it became established that the \$33 maximum price should rule f.o.b. all furnaces for No. 2 foundry and basic, No. 2 foundry being established at silicon 1.75 to 2.25%. Grade differentials are established at 50 cents per number and forge becomes \$32. Malleable is \$33.50 and Bessemer \$36.30 while low phosphorus copper bearing is \$50 and copper free \$53. Southern or warm blast charcoal iron .40 to .60% phosphorus and 1 to 2% silicon is \$43, cold blast being \$55 maximum.

Bars, 2.90c; shapes, 3.00c; plates, 3.25c, f.o.b. Pittsburgh or Chicago. Usual differentials, etc., to apply.

October 11.

Billets 4x4 and larger, \$47.50; small billets, \$51; slabs, \$50; sheet bars, \$51, f.o.b. Pittsburgh or Youngstown. A

slab has width at least twice the thickness, other material being billets, and standard billets if the sectional area is 16 square inches or more.

Wire rods, \$57, Pittsburgh.

Skelp, grooved, 2.90c; universal, 3.15c; sheared, 3.25c; Pittsburgh.

Shell steel bars, net, no extras: 3 to 5-inch inclusive, 3.25c; over, including 8-inch, 3.50c; over, including 10-inch, 3.75c; over, 10-inch, 4.00c, Pittsburgh.

November 5.

Sheets: Black, 28 gauge, 5.00c; blue annealed, 10 gauge, 4.25c; galvanized, 25 gauge, 6.25c, Pittsburgh. Bessemer and open-hearth same price.

Tin plate, \$7.75 per base box, 100-pound, no extra for open-hearth.

Plain wire, 3.25c.

Standard steel pipe, $\frac{3}{4}$ to 3-inch, 52, 5 and 21 $\frac{1}{2}$ % net off list. This corresponds to a published list based on 51% with usual trimmings.

The Institute Announcements—Double Col. Head—Large type.—

The American Iron and Steel Institute, from its offices, Adams Building, 61 Broadway, New York City, has made various announcements, as given below. While these announcements have been made in the same form, and are of equally binding character, one with another, the regulations differ in their character in this respect: (1) Some, like the pig iron analyses and differentials, represent the exercise of judgment as to what would be fair proportions, when trade practices have not been entirely uniform; (2) Some, like the extras on steel bars, represent merely the affirmation of schedules that have long been accepted by all mills as absolutely standard; (3) Some, like the prices for cold rolled strip steel and the margins for jobbers, represent the judgment of Institute committee after conference with representative trade interests.

PIG IRON DIFFERENTIALS

Basis, \$33 at furnace for No. 2 foundry and basic iron.

The grade of No. 2 foundry iron to be equivalent in analysis to: Silicon, 1.75% to 2.25%; sulphur, not over .05%.

No. 2 soft Southern iron equivalent

to No. 2 foundry of same silicon content.

Differentials from the above base price for No. 2 foundry iron to be made for the following changes in specifications:

Forge or mill iron, \$1.00 per gross ton under base; foundry iron running silicon 1.00% to 1.75%, 50c per gross ton under base; foundry iron running silicon, 2.25% to 2.75%, 50c per gross ton over base; foundry iron running silicon 2.75% to 3.25%, \$1.50 per gross ton over base; foundry iron in excess of 3.25% silicon add \$1.00 per gross ton for each $\frac{1}{2}$ % of silicon over the price for 3.25% silicon iron.

Manganese, sulphur and phosphorus variations to be adjusted as formerly customary in each district having respect to the base price.

Where iron is sold by fracture the usual grading prevailing in each district to continue.

Malleable iron, 50c per gross ton above base; Bessemer iron, 10% per gross ton above base; basic iron, base price.

Charcoal Iron.

Southern or warm blast charcoal iron a maximum of \$10 per gross ton above base for iron ranging .40% to .60% phosphorus, and silicon 1.00% to 2.00%.

For grades running below these analyses corresponding reductions as usual to the trade to be made.

Cold blast charcoal iron a maximum of \$22 per gross ton above base with customary reductions for lower grades, as recognized by the trade.

Lake Superior iron \$2.50 per gross ton above base for iron averaging 1.25% silicon. Other grades to be adjusted as per the custom of the trade depending upon the silicon, phosphorus and manganese contents of the iron.

All of these charcoal iron differentials to be considered in connection with the base price.

High Silicon or Silvery Iron.

For iron containing:

6%	Silicon, \$7.00 per gross ton above base.
7%	" 9.00 " " " " " "
8%	" 11.50 " " " " " "
9%	" 14.00 " " " " " "
10%	" 17.00 " " " " " "

\$3.00 per gross ton advance for each 1% silicon for 11% and over.

Bessemer Ferro Silicon.

For iron containing:

10% Silicon	\$22.00	per gross ton above base.
11% "	25.30	" " " " "
12% "	28.60	" " " " "

Low Phosphorus Iron.

Iron containing phosphorus and sulphur not exceeding .04%, and silicon not exceeding 2%:

For copper bearing iron, \$17 per gross ton above base; for copper free iron, \$20 per gross ton above base.

A sliding scale of \$1.50 per gross ton advance for each reduction in phosphorus of .005% below .04%, and \$1.75 per gross ton advance for each 1% of silicon in excess of 2%.

EXTRAS ON STEEL BARS AND SHAPES UNDER 3 IN.

These are the standard extras (full extras) already in common use in the trade. They do not apply on shell steel, the set prices for which are base, without extras.

Rounds and Squares.

Extras in cents per pound to be added to the base price per pound.

	Base	Extra
3/4 to 3 1/2"		
3/8 to 1 1/2"	.05c	
1/2 to 1"	.10c	
1/4 to 3/4"	.20c	
3/8 to 1 1/2"	.25c	
11-32"	.30c	
7/8"	.35c	
9-32"	.40c	
1/4"	.50c	
15-64"	.75c	
7-32"	1.00c	
3/8"	1.25c	
3/16 to 9/16"	.075c	
3/8 to 4 1/2"	.125c	
4 1/8 to 4 3/4"	.15c	
4 1/8 to 5 1/4"	.20c	
5 1/8 to 5 1/2"	.25c	
5 5/8 to 6 1/4"	.375c	
6 1/8 to 6 1/2"	.50c	
6 5/8 to 7 1/4"	.625c	

For intermediate sizes, the next higher extra to be charged in all cases.

Flats.

Extra.

	Base	Extra
1 to 6"x3 1/2 to 1"		
1 to 6"x1 1/2 to 1 1/2"	.10c	
1 1/2 to 1 1/2"x3 1/2 to 1 1/2"	.20c	
1 1/2 to 1 1/2"x1 1/2 to 1 1/2"	.25c	
1 1/2 to 1 1/2"x3 1/2 to 1 1/2"	.25c	
1 1/2 to 1 1/2"x1 1/2 to 1 1/2"	.35c	
1 1/2"x3 1/2 to 1 1/2"	.50c	
1 1/2"x1 1/2 to 1 1/2"	.60c	
1 1/2"x3 1/2 to 1 1/2"	.70c	
1 1/2"x1 1/2 to 1 1/2"	.80c	
1 1/2"x1 1/2 to 1 1/2"	1.00c	
1 1/2 to 6"x1 1/2 to 1 1/2"	.05c	
1 1/2 to 6"x1 1/2 to 1 1/2"	.10c	
1 1/2 to 6"x1 1/2 to 1 1/2"	.15c	
1 1/2 to 6"x3 1/2 to 4"	.20c	

For intermediate sizes, the next higher extra to be charged in all cases.

Angles.

Extra.

1 1/2x1 1/2" and wider, but under 3"	
wide x 1 1/2" and heavier	.10c
1 1/2"x1 1/2" and wider, but under 3"	
wide x 1 1/2"	.15c
1x1 to 1 1/4x1 1/4"x1 1/2" and heavier	.15c
1x1 to 1 1/4x1 1/4"x1 1/2"	.20c
7/8x7/8"x1 1/2"	.20c
7/8x7/8"x1 1/2"	.25c
3/4x3/4"x1 1/2"	.25c
3/4x3/4"x1 1/2"	.30c
5/8x5/8"x1 1/2"	1.10c
5/8x5/8"x3-32"	1.30c
1/2x1/2"x1 1/2"	1.60c
1/2x1/2"x less than 1/2"	1.80c
3" on one or both legs by less than 1 1/4" thick	.35c

Unequal leg angles are subject to special prices, which will be furnished on application.

For intermediate sizes, the next higher extra to be charged in all cases.

Channels.

Extra.

1 1/2x1 1/2" and wider, but under 3"	
wide x 1 1/2" and heavier	.15c
1 1/2" and wider, but under 3" wide x 1 1/2"	.25c
1 to 1 1/2"x1 1/2" and heavier	.25c
1 to 1 1/2"x1 1/2"	.35c
1 to 1 1/2"x7-64"	.50c
3/4 and 7/8"x1 1/2" and heavier	.30c
3/4 and 7/8"x1 1/2"	.40c
3/4 and 7/8"x7-64"	.55c
5/8x1 1/2" and heavier	1.20c
5/8x3-32" and heavier	1.40c
1 1/2x7-64" and heavier	1.80c
1 1/2x5-64"	2.00c

For intermediate sizes, the next higher extra to be charged in all cases.

Tees.

Extra.

1 1/2x1 1/2" and wider, but under 3"	
wide x 1 1/2" and heavier	.20c
1x1 to 1 1/4x1 1/4"x1 1/2" and heavier	.40c
1x1 to 1 1/4x1 1/4"x1 1/2"	.50c
7/8x7/8"x1 1/2"	.50c
7/8x7/8"x1 1/2"	.60c
3/4x3/4"x1 1/2"	.60c
3/4x3/4"x1 1/2"	.70c
5/8x5/8"x1 1/2"	1.30c
1 1/2x1 1/2"x1 1/2"	1.80c

Unequal leg tees are subject to special prices, which will be furnished on application.

For intermediate sizes, the next higher extra to be charged in all cases.

Hexagons.

Extra.

3/4 to 3"	.15c
5/8 to 1 1/2"	.25c
1 1/2 to 1 1/2"	.35c
7/8"	.55c
5/8"	.65c
1 1/2"	.75c
1 1/2"	1.00c

For intermediate sizes, the next higher extra to be charged in all cases.

Half Rounds.

	Extra.
1 to 3" .....	.20c
3 1/2 to 4" .....	.35c
5 1/2 to 6" .....	.50c
7 1/2 to 8" .....	.70c
9 1/2 to 10"	1.10c

For intermediate sizes, the next higher extra to be charged in all cases.

Half Ovals.

Gauges shown are Birmingham Wire Gauge.

	Extra.
1 to 4"x1 1/2" and thicker .....	.25c
1 to 4" x Nos. 7, 8, 9, and 10" .....	.35c
1 to 4" x Nos. 10, 11, 12, and 14" .....	.50c
3 1/2 to 4"x1 1/2" and thicker .....	.50c
3 1/2 to 4" x Nos. 10, 11, 12 and 14" .....	.65c
3 1/2 to 4" x Nos. 13, 14 and 15" .....	.80c
5 1/2 to 6"x5-32" and thicker .....	.60c
5 1/2 to 6" x Nos. 10, 11, 12 and 14" .....	.75c
5 1/2 to 6" x Nos. 13, 14 and 15" .....	.90c
7 1/2 to 8"x1 1/2" and thicker .....	.80c
7 1/2 to 8" x Nos. 13, 14 and 15"	1.05c
9 1/2 to 10"x3-32" and thicker	1.35c
9 1/2 to 10" x Nos. 14 and 15"	1.60c

For intermediate sizes, the next higher extra to be charged in all cases.

Ovals.

	Extra.
3 1/2 to 2 1/2"x1 1/2" and thicker .....	.20c
3 1/2 to 2 1/2"x1 1/2" to 1 1/2" .....	.30c
3 1/2 to 2 1/2"x5-32" to 1 1/2" .....	.45c
5 1/2 to 4"x1 1/2" and thicker .....	.35c
5 1/2 to 4"x1 1/2" to 1 1/2" .....	.50c
5 1/2 to 4"x1 1/2" to 5-32" .....	.65c
7 1/2 to 6"x1 1/2" and thicker .....	.55c
7 1/2 to 6"x1 1/2" to 1 1/2" .....	.70c
7 1/2 to 6"x3-32" .....	.95c
9 1/2 to 8"x1 1/2" and thicker .....	.95c
9 1/2 to 8"x1 1/2" to 5-32"	1.20
9 1/2 to 8"x3-32"	1.45c

For immediate sizes, the next higher extra to be charged in all cases.

Bands.

Gauges shown are Birmingham Wire Gauge.

	Extra.
1 1/2 to 6"x Nos. 7, 8, 9 and 10" .....	.20c
1 1/2 to 6" x Nos. 10, 11, 12 and 14" .....	.30c
1 to 1 1/2" x Nos. 7, 8, 9, and 10" .....	.25c
1 to 1 1/2" x Nos. 10, 11, 12 and 14" .....	.35c
1 1/2 to 1 1/2" x Nos. 7, 8, 9, and 10" .....	.35c
1 1/2 to 1 1/2" x Nos. 10, 11, 12 and 14" .....	.40c
1 1/2 to 1 1/2" x Nos. 7, 8, 9, and 10" .....	.50c
1 1/2 to 1 1/2" x Nos. 10, 11, 12 and 14" .....	.60c
3 1/2 to 5" x Nos. 7, 8, 9, and 10" .....	.60c
3 1/2 to 5" x Nos. 10, 11, 12 and 14" .....	.65c
3 1/2" x Nos. 7, 8, 9, and 10" .....	.65c
3 1/2" x Nos. 10, 11, 12 and 14" .....	.75c
5 1/2" x Nos. 7, 8, 9, and 10" .....	.90c
5 1/2" x Nos. 10, 11, 12 and 14"	1.05c
7 1/2" x Nos. 7, 8, 9 and 10" .....	.95c
7 1/2" x Nos. 10, 11, 12 and 14"	1.20c

For intermediate sizes, the next higher extra to be charged in all cases.

Quantity Differentials.

All specifications for less than 2,000 lb. of a size will be subject to the following extras, the total weight of a size ordered to determine the extra, regardless of length and regardless of exact quantity actually shipped.

	Extra.
Quantities less than 2,000 lb. but not less than 1,000 lb. ....	.15c
Quantities less than 1,000 lb. ....	.35c

Straightening.

	Extra.
Machine straightening .....	.10c

Machine Cutting Rounds and Squares. 1 1/2" and Larger to Specified Lengths.

	Extra.
Machine cutting to lengths of 48" .....	.15c
Machine cutting to lengths over 24" to 48" inclusive .....	.25c
Machine cutting to lengths over 12" to 24" inclusive .....	.35c
Machine cutting to lengths of 12" and less, extra will be furnished on application, but will not be less than .....	.45c

The above extras apply only to 0.50 carbon and under. Extras for machine cutting over 0.50 carbon will be furnished on application.

Extras for machine cutting rounds and squares under 1 1/2" flats, etc., will be furnished on application.

Cutting to Specified Lengths.

	Other than machine cutting
Cutting to lengths of 60" and over, No charge.	

	Extra.
Cutting to lengths over 48" to 59" inclusive .....	.05c
Cutting to lengths over 24" to 48" inclusive .....	.10c
Cutting to lengths over 12" to 24" inclusive .....	.20c
Cutting to lengths of 12" and less extra will be furnished on application, but will not be less than .....	.30c

STANDARD CLASSIFICATION OF EXTRAS ON STEEL PLATES.

Extras in cents per pound to be added to the base price per pound.

Conditions.

Rectangular plates, tank steel, 1/4" thick and over on thinnest edge, 100" wide and under, down to but not including 6" wide are base.

Plates up to 72" wide, inclusive, ordered 10.2 lb. per sq. ft., are considered 1/4" plates. Plates over 72" wide must be ordered 1/4" thick on edge, or not less than 11 lb. per sq. ft., to take base price. Plates over 72" wide ordered less than 11 lb. per sq. ft. down to the weight of 10" take the price of 10" plates, and all extras for width of 10" plates as well as gauge.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Width.

	(Applies to plates 1/4" thick and heavier)	Extra.
Widths over 100" to and incl. 110" ..		.05c
Widths over 110" to and incl. 115" ..		.10c
Widths over 115" to and incl. 120" ..		.15c
Widths over 120" to and incl. 125" ..		.25c
Widths over 125" to and incl. 130" ..		.50c

Width. (Ctd.)

	Extra.
Widths over 130" to and incl. 135" ..	1.00c
Widths over 135" to and incl. 140" ..	1.25c
Widths over 140" ..	1.50c

Gauges.

	Extra.
Gauges lighter than $\frac{1}{4}$ " to and including $\frac{1}{8}$ " in thin edges up to 72" wide, inclusive .....	.10c
Gauges lighter than $\frac{1}{4}$ " to and including $\frac{1}{8}$ " on thin edge over 72" wide to 84" wide inclusive .....	.20c
Gauges lighter than $\frac{1}{4}$ " to and including $\frac{1}{8}$ " on thin edge over 84" wide to 96" wide inclusive .....	.30c
Gauges lighter than $\frac{1}{4}$ " to and including $\frac{1}{8}$ " on thin edge over 96" wide to 100" wide inclusive .....	.40c
Gauges lighter than $\frac{1}{4}$ " to and including $\frac{1}{8}$ " on thin edge over 100" wide to 103" wide inclusive .....	.45c

Grades.

	Extra.
Pressing steel .....	.10c
Flange steel (boiler grade) .....	.15c
Ordinary wirebox steel .....	.20c
Stillbottom steel .....	.30c
Locomotive firebox steel .....	.50c
"Marine" steel	1.50c
Material subject to Navy Department inspection .....	.10c
High tensile hull steel to U. S. Navy Dept. or equivalent specifications ..	1.00c
Navy Department boiler steel, Classes A and B	1.50c
Hull plates to hull specifications required to stand cold flanging take extra for flange steel.	

Cutting.**Rectangular Plates.**

	Extra.
Lengths 3 ft. and over ..	No
Lengths under 3 ft. to 2 ft. inclusive ..	.25c
Lengths under 2 ft. to 1 ft. inclusive ..	.50c
Lengths under 1 ft.	1.55c

Regular Sketches

(With not more than four straight cuts— including straight taper plates.)	
Lengths 3 ft. and over .....	.10c

Irregular Sketches.

Lengths 3 ft. and over .....	.20c
Sketches sheared to a radius take circle extras.	

Circles.

Diameters 3 ft. and over, 25% of base price	
Half circles take circle extras.	

Special.

Wasteful or difficult sketches, including hexagons, octagons, etc., are subject to special extras.

Sketches or circles over 100" in width or diameter take width extras in addition to sketch or circle extras.

Sketches cannot be sheared with re-entrant angles.

All sketches, regular, irregular, circular, semicircular or special, with greatest dimension under 3 ft., take length extras shown under rectangular plates, in addition to sketch or circle extra.

tion to sketch or circle extra.

For cold sawing such items that cannot be sheared (such as stem bars), extra of 0.25c will apply.

Floor Plates.

	Extra.
Ribbed, diamond, checkered	1.75c
(Floor plates are not furnished to sketch).	

Inspection.

Charges for Lloyd's inspection or American Bureau of Shipping for buyer's account.

STANDARD CLASSIFICATION OF EXTRAS ON STANDARD STRUCTURAL SHAPES.

Extras in cents per pound to be added to base price per pound.

	Extra.
Standard structural beams and channels, 3 to 15" incl.	Base
Angles, structural sizes, 3 to 6" on one or both legs, $\frac{1}{4}$ " thick and over	Base
Zees, structural sizes	Base
Standard structural beams, over 15" ..	.10c
Angles, structural sizes, over 6" on one or both legs .....	.10c
Tees, structural sizes, excepting elevator, hand rail, car truck and conductor rail tees .....	.05c
Bull beams .....	.50c
Bull angles (not incl. special bull angles for torpedoes and destroyers)	.50c
Cutting to lengths under 3 ft. to 2 ft. inclusive .....	.25c
Cutting to length under 2 ft. to 1 ft. inclusive .....	.50c
Cutting to length under 1 ft.	1.55c
No charge for cutting to length 3 ft. and over, all material is subject to the following tolerances.	

	Over.	Under.
Beams and channels, 3 to 15" incl.	3"	3"
Angles, tees, zees, and other shapes, structural sizes, 3 to 6" ..	6"	6"

	Extra.
Cold sawing to exact length .....	.25c

Material subject to Navy Department inspection .....	.10c
Navy Department high tensile steel ..	1.00c
Charges for Lloyd's inspection or American Bureau of Shipping for buyer's account.	

Extras on special sections subject to determination.

EXTRAS ON OTHER FORMS OF STEEL.

Concrete Reinforcing Bars.

	Extra.
Twisted squares .....	.125c
Deformed sections .....	.075c

Rivet Rods.

	Extra.
Medium steel	Base
High tensile (subject to Navy specifications)	4.05c

Spring Steel.

	Extra.
Railway spring steel .....	.25c
Automobile spring steel .....	.25c

STANDARD DIFFERENTIALS AND EXTRAS FOR TIN AND TERNE PLATE

QUANTITY: All sizes in weights 55# to 195# in lots of less than 50 Base Boxes		Add	10c Basis
All sizes in weights heavier than 195# in lots of less than 5,000 pounds		Add	5c per 100#
PACKING: Sizes which are usually packed 112 sheets per box that are specified		Add	10c Basis
FRAMING: To be not less than 1/8"			
TIN LINED CASES		Add	30c Basis
The minimum charge in any case to be		Add	30c per Pkg.
PAPER LINED		Add	15c Basis
The minimum charge in any case to be		Add	15c per Pkg.
STRAPPING: Corners only		Add	5c per Pkg.
Double Strapping		Add	10c per Pkg.
Termes.			
8#—100#	\$15.00 per pkg.	20#— IC	19.00 per pkg.
8#— IC	15.30 per pkg.	25#— IC	20.00 per pkg.
12#— IC	16.75 per pkg.	30#— IC	21.00 per pkg.
15#— IC	17.75 per pkg.	35#— IC	22.00 per pkg.
		40#— IC	23.00 per pkg.
WEIGHT: For IX		Add	\$1.80 per pkg.
WASTERS: IC and Lighter		Deduct	.50 per pkg.
128# and Heavier		Deduct	1.00 per pkg.
ODD SIZE: All weights and all sizes other than 1 x 20 and 20 x 28 in lots of less than 100 Base Boxes		Add	10c Basis
QUANTITY: Items less than 50 Base Boxes		Add	10c Basis

Long Termes—8lb. Coating.

No. 30 gauge	\$7.00 per 100 lbs.
29 gauge	6.75 per 100 lbs.
28 gauge	6.50 per 100 lbs.
27 gauge	6.35 per 100 lbs.
25-26 gauge	6.20 per 100 lbs.
22-24 gauge	6.05 per 100 lbs.
17-21 gauge	5.90 per 100 lbs.
16 gauge	5.75 per 100 lbs.

Other Grades at usual differentials.

Extras for sizes, etc., same as Galvanized Sheets.

SECONDS	Deduct	50c per 100 lbs.
UNASSORTED	Deduct	10c per 100 lbs.
PRIMES ONLY	Add	10c per 100 lbs.

Tin Mill Black Plate.

Hot Rolled and Annealed, or Hot Rolled, 1-Pass Cold Rolled.

Nos. 15-16	\$4.80 per 100 lbs.	No. 33	\$5.20 per 100 lbs.
17-21	4.85 per 100 lbs.	34	5.25 per 100 lbs.
22-24	4.90 per 100 lbs.	35	5.35 per 100 lbs.
25-27	4.95 per 100 lbs.	36	5.45 per 100 lbs.
28	5.00 per 100 lbs.	37	5.55 per 100 lbs.
29-30	5.05 per 100 lbs.	38	5.70 per 100 lbs.
30 1/2-31	5.10 per 100 lbs.		
32	5.15 per 100 lbs.		
Blued Stove Pipe Stock	Add	10c per 100 lbs.	
Enameling Stock	Add	25c per 100 lbs.	
Full Finished Black Plate	Add	25c per 100 lbs.	
Show Card Stock	Add	35c per 100 lbs.	
Tea Tray Stock	Add	40c per 100 lbs.	
Milk Can Stock	Add	50c per 100 lbs.	
Nickel Plating Stock	Add	50c per 100 lbs.	

Extras for Tin Mill Black.

GAUGE	WIDTHS	LENGTHS
Nos. 15 to 31	10 to 30 None Over 30 to 32 10c Under 10 to 6 15c Under 6 to 4 20c	10 to 84 None
Nos. 32 to 35	10 to 26 None Over 26 to 30 10c Over 30 to 32 20c Under 10 to 8 10c Under 8 to 5 15c	Over 10 to 40 None Over 40 to 48 5c Over 48 to 60 10c Over 60 to 72 20c Under 10 to 8 10c
Nos. 36 to 38	10 to 20 None Over 20 to 24 5c Over 24 to 28 10c Over 28 to 30 20c Under 10 to 8 10c Under 8 to 5 15c	Over 10 to 30 None Over 30 to 36 20c Over 36 to 42 25c Over 42 to 48 30c Under 10 to 8 10c
Nos. 39 to 40	10 to 20 None Over 20 to 24 10c Under 10 to 8 15c Under 8 to 5 20c	Over 10 to 28 None Over 28 to 30 10c Under 10 to 8 15c

QUANTITY: Items less than 5,000 lbs. 10c per 100 lbs.

BOXING: 10c per 100 lbs.

OILING: Sizes up to 20 wide or 40 long, 10c per 100 lbs.

RESQUARING: ± 28 and Heavier—Ends.....10c per 100 lbs.

Ends & Sides.....12 1/2c per 100 lbs.

Lighter than ± 28 —Ends.....12 1/2c per 100 lbs.

Ends & Sides.....15c per 100 lbs.

ONE PASS COLD ROLLED BLACK SHEETS

Standard Differentials and Extras.

Gauge	Price Per Hundred Pounds
30 Add	20c
29 Add	10c
28 Add (Carload quantities)	Base
27 Deduct	5c
25-26 Deduct	10c
22-24 Deduct	15c
17-21 Deduct	20c
15-16 Deduct	25c
13-14 Deduct	30c
10-12 Deduct	35c

Standard Sizes.

Gauges Nos. 12 to 30, inclusive, 24, 26, 28 and 30 inches wide, by 72, 84, 96 and 120 inches long.
Gauges Nos. 14 to 28, inclusive, 36 inches wide by 96 inches and 120 inches long.

See note under extras for boxing and crating.

Extras for Length.

Gauge	Length	Extra Per Hundred Pounds
16 and Heavier	60" & longer	Base
16 and Heavier	Under 60 to 30"	5c
16 and Heavier	Under 30 to 18"	10c
17 to 18	Over 60 to 120"	Base
17 to 18	Over 120 to 132"	5c
17 to 18	Over 132 to 144"	10c
17 to 18	Under 60 to 24"	5c
17 to 18	Under 30 to 18"	10c
19 and Lighter	Over 60 to 120"	Base
19 and Lighter	Over 120 to 144"	10c
19 and Lighter	Under 60 to 30"	10c
19 and Lighter	Under 30 to 18"	20c

Extras for Width.

Gauge	Width	Extra Per Hundred Pounds
16 and Heavier	24" & wider	Base
16 and Heavier	Under 24 to 12"	10c
16 and Heavier	Under 12 to 6"	15c
17 to 18	Over 24 to 36"	Base
17 to 18	Over 36 to 48"	5c
17 to 18	Under 24 to 12"	10c
17 to 18	Under 12 to 6"	15c
19 and Lighter	Under 12 to 6"	20c
19 and Lighter	Under 24 to 12"	10c
19 to 21	Over 24 to 36"	Base
19 to 21	Over 36 to 44"	15c
19 to 21	Over 44 to 48"	25c
22 to 24	Over 24 to 36"	Base
22 to 24	Over 36 to 40"	20c
23 to 24	Over 40 to 48"	40c
25 to 27	Over 24 to 36"	Base
25 to 27	Over 36 to 40"	20c
25 to 27	Over 40 to 44"	40c
28	Over 32 to 36"	10c
28	Over 36 to 40"	40c
29 to 30	Over 32 to 36"	10c

Galvanized Sheets and Long Terne Sheets.

Standard Differentials and Extras for Gauge.

Gauge	Price Per Hundred Pounds
30 Add	50c
29 Add	25c
28 Add (Carload quantities)	Base
27 Deduct	15c
25-26 Deduct	30c
22-24 Deduct	45c
17-21 Deduct	60c
15-16 Deduct	75c
12-14 Deduct	90c
10-11 Deduct	\$1.00

Standard Sizes.

Gauges Nos. 12 to 30, inclusive, 24, 26, 28, 30 and 36 inches wide, by 72, 84, 96 and 120 inches long.
Gauges Nos. 14 to 28, inclusive, 36 inches wide by 96 inches and 120 inches long.

Extras for Length.

Gauge	Length	Extra Per Hundred Pounds
16 and Heavier	60 to 144"	Base
16 and Heavier	Under 60 to 30"	5c
16 and Heavier	Under 30 to 18"	10c
17 to 18	Over 60 to 120"	Base
17 to 18	Over 120 to 132"	5c
17 to 18	Over 132 to 144"	10c
17 to 18	Under 60 to 30"	5c
17 to 18	Under 30 to 18"	10c
19 and Lighter	Over 60 to 120"	Base
19 and Lighter	Over 120 to 144"	10c
19 and Lighter	Under 60 to 30"	10c
19 and Lighter	Under 30 to 18"	20c

Extras for Width.

Gauges	Width	Extra Per Hundred Pounds
10-15	Over 32 to 40"	None
	Over 40 to 44"	10c
	Over 44 to 48"	20c
16-18	Over 32 to 36"	None
	Over 36 to 44"	10c
	Over 44 to 48"	20c
19-21	Over 32 to 36"	None
	Over 36 to 40"	20c
	Over 40 to 44"	30c
	Over 44 to 48"	40c
22-24	Over 32 to 36"	None
	Over 36 to 40"	20c
	Over 40 to 44"	40c
	Over 44 to 48"	60c
25-26	Over 32 to 36"	Base
	Over 36 to 40"	30c
	Over 40 to 44"	60c
27	Over 32 to 36"	10c
	Over 36 to 40"	50c
	Over 40 to 44"	75c
28	Over 32 to 36"	20c
	Over 36 to 40"	60c
29-30	Over 32 to 36"	20c
24 and Heavier	Under 24 to 12"	.15c
	Under 12 to 9"	.35c
25 and Lighter	Under 24 to 12"	.20c
	Under 12 to 9"	.35c

See note under extras for boxing and crating.

BLUE ANNEALED SHEETS.

Gauge	Price Per Hundred Pounds
8 and Heavier	Less 5c
9 and 10 (Carload quantities)	Base
11 and 12	Add 5c
13 and 14	Add 10c
15 and 16	Add 20c

Extras for Length.

Gauge	Length	Extra Per Hundred Pounds
16 and Heavier	60" and longer	Base
16 and Heavier	Under 60 to 30"	Add 5c
16 and Heavier	Under 30 to 18"	Add 10c

Extras for Width.

Gauge	Width	Extra Per Hundred Pounds
16 and Heavier	Under 24 to 12"	Add 5c
16 and Heavier	Under 12 to 6"	Add 10c
16 and Heavier	24" and wider	Base

PAINTED AND FORMED PRODUCTS.

Standard differentials and extra, extras per square over corresponding gauges of flat sheets are based on weight

per square multiplied by extra per 100 lbs.
Painting per 100 lb.

	29	25/28	19/24	12/18
Red Oxide of Iron	\$0.25	\$0.20	\$0.15	

Forming per 100 lb.

2 V-Crimp—without	.05	.05	.05	.05
2 V-Crimp—without	.05	.05	.05	.05
2 V-Crimp—without	.10	.10	.10	.10
2 V-Crimp—without	.10	.10	.10	.10
Pressed Standing				
Seams—with cleats	.15	.15	.15	.15
Plain Roll Roofing				
—without				
—cleats	.15	.15	.15	.15
Plain Brick Siding	.20	.20	.20	.20

Extras in addition to above per 100 lbs.

Corrugating Sheet				
Crosswise	\$0.10	\$0.10	\$0.10	\$0.10
Curving—Corrugated				
Sheets, Single Curve	.25	.25	.25	.25
Curving—Corrugated				
Sheets, Double				
Curve	.50	.50	.50	.50
Forming—Sheets under				
60" long to 30" in-				
clusive	.05	.05	.05	.05
Forming—Sheets under				
30" long to 20" in-				
clusive	.10	.10	.10	.10
Forming—Sheets under				
20" long	.25	.25	.25	.25

Lengths—Standard Lengths of all forms are 60, 66, 72, 78, 84, 90, 96, 102, 108, 114, 120, 132 and 144 inches. Flat Sheets Extras will apply on Lengths over 132 inches.

Sticks for V-Crimp Roofing, 25 cents per lineal foot.

Standard Miscellaneous Extras.

Shearing circles, all gauges.

9 to 10 gauge	Add 25%
11 to 16 gauge	Add 30%
17 to 18 gauge	Add 35%
19 to 20 gauge	Add 40%

Prices on Circles lighter than No. 20 will be quoted on application. Prices of finished Circles to be determined by adding the percentage extra to the price of the finished rectangle.

Resquaring.

5% of Price of sheet at time of resquaring

Patent Leveling.

25c per 100 lbs.

Inspection.

Special inspection by buyer, 10c per 100 lbs.

Extras for Boxing and Crating.

Per Cwt.

	Net Weight of Sheets
Skeleton Crates	40c
Skeleton Crates, Felt Lined	50c
Tight Boxes, Unlined	60c
Tight Boxes, Felt Lined	70c
Boxed with Felt Ridge	10c
Crating extras are based on crates containing 500 to 600 pounds. For any material packed lighter or heavier than 500 to 600 per crate, an extra charge will be made.	

Note: On all sizes other than standard, when specified in quantities of less than 4,000 lbs. to the item prices will be quoted on application.

Miscellaneous.

	Extra Per Hundred Pounds
Full Cold Rolled and Annealed	15c
Single Pickled Cold Rolled and Annealed	40c
Single Pickled and Oiled or Lined	35c
Hot Pickled, Pickled and Annealed	25c
Full Pickled, Full Cold Rolled and Annealed	60c
Blue Strappings Stock	15c
Range Steel to Manufacturers	30c
Off Patent Leveling	55c
Blue Range Steel	50c
Off Patent Leveling	75c
Deep Stamping or Drawing	25c

Extra Per 100 lbs.

Extra Deep Stamping or Drawing	50c
Patent or Stretcher Leveling	25c
Oiling	10c
Line Finish	10c
Decarburizing	15c
P. A. C. R. and Reannealed for Tinning	50c
Box Socket Stock	50c
Shovel Stock Carbon 25c to 40c	10c
Milk Can Stock	50c
Roller Leveling	10c
Extra Box Annealing	15c
Long Termes, Special Finish	50c

CHAIN.

Base price of $\frac{3}{8}$ inch Common Steel

Proof Coil Chain, self-colored or

blacked, per 100 lbs., f.o.b. Pittsburgh

\$8.00

Extras.

Sizes.

For $\frac{1}{8}$	add 55c
" $\frac{1}{4}$	" \$1.55
" $\frac{3}{8}$	" \$4.10 per 100 pounds.
" $\frac{1}{2}$	deduct 15c
" $\frac{5}{8}$	" 30c
" $\frac{3}{4}$	" 40c
" $\frac{7}{8}$	" 50c
" 1"	" 60c
" 1 1/2"	" 70c

For $\frac{1}{8}$ to $\frac{1}{4}$ deduct 60c

For Twice Link Size $\frac{1}{8}$ to $\frac{1}{4}$ inch inclusive add 50c per 100 lbs.

For Bright Coil Chain—Add 25c per 100 lbs.

$\frac{1}{8}$ and Advance over

Sizes. $\frac{3}{4}$ inch. Proof Quality.

For B B Quality	\$1.25	\$1.00 per 100 lbs.
" B B B "	\$1.75	\$1.50 "

Iron Chain: For Iron Chain, add as follows to price of Regular Coil:

1 1/2"	1.50	3/4"	.35
1 1/4"	1.00	3/8"	.35
1 1/2"	.75	1"	.30
1 1/4"	\$2.00	3/4"	\$.50
1 1/2"	.75	1 1/4"	.25
1 1/4"	.50		

COLD ROLLED STRIP STEEL.

Base Price \$0.50 per 100 lbs. for $11\frac{1}{2}$ " and wider, .100" and thicker, Hard Temper, in Coils, under .20 Carbon. Extras to be added to Base for sizes, annealing, cutting, packing, etc., as follows:

Standard Extras. In effect Oct. 25, 1917.

Extra for thickness:

	Base.
.100" and thicker	
.050 to .099	\$.20
.045 to .049	.45
.041 to .044	.60
.025 to .040	.80
.020 to .024	1.10
.017 to .019	2.10
.015 to .016	2.65
.013 to .014	3.30
.012	3.95
.011	4.20
.010	4.65

Extras for narrow widths:

Base

Under 1" to 1" Incl.	
.100 and thicker to .035	.25
.034 to .020	.40
.019 to .010	.50
Under 1" to 2" Incl.	
.100 and thicker to .035	.45
.034 to .020	.60
.019 to .010	.70

Extra for cutting to length:

24" and longer.	
1" and wider	
.100 and thicker	.15
.099 to .035	.25
.034 to .024	.40
.025 to .020	.55
.020 to .024	.70
.019 to .015	1.50
.013 to .014	2.00
.012 to .010	Coils only

For cutting to lengths under 24" triple extras will be added.

Extra for wide widths:

Wider than 6", not over 9"	
.031 to .030	.15
.025 to .024	.25
.017 to .016	.50
.013 to .010	*

Wider than 9", not over 12"	
.035 to .030	.40
.025 to .024	.60
.017 to .019	.75
.015 to .010	*

Wider than 12", not over 15"	
.036 to .049	.25
.035	.50
.031 to .034	.60
.026 to .030	.75
.025	*
.017 to .010	*

* Extras quoted on application.

B boxing or wrapping .15 extra. Minimum charge .50c.

Extra for annealing:

.100 and thicker	.45
.050 to .099	.45
.035 to .049	.55
.034 to .020 incl.	.70
.019 to .010 incl.	No extra

for temper.

Extras for Small Quantities.

On orders or contracts for 18 tons or more, add extras only on items of less than 2,000 lbs.

3 to less than 18 tons of one size	.10
1 to less than 3 tons of one size	.25
1,000 to less than 2,000 lbs. of one size	.40
500 to less than 1,000 lbs. of one size	1.00
300 to less than 500 lbs. of one size	2.00
200 to less than 300 lbs. of one size	3.00
100 to less than 200 lbs. of one size	5.00

Order for less than 100 lbs. of one size will be accepted only at the full value of 100 lbs.

Extra for gauges lighter than .010 quoted on application.

NOTE.—The charge for cutting to length does not relieve buyer from scrap loss, and short pieces left from cutting will be

shipped and invoiced at price of long lengths. If lengths over 36" are ordered and no short pieces taken, add 10% to net price.

HOT ROLLED FINISHED STRIP STEEL.

Base, f.o.b. Pittsburgh, Per 100 lbs. \$4.50

UNFINISHED HOT ROLLED STEEL FOR COLD ROLLING.

Base, f.o.b. Pittsburgh, per 100 lbs. \$3.50

Both subject to following list of extras and differentials

HOT ROLLED FINISHED STRIP STEEL.

Under .20 Carbon.

In coils, or cut to lengths 4' to 16—including shorter pieces that accrue in cutting.

6" &

Narrower 6¹/₁₆"-10" 10¹/₁₆"-15"

Ga. 12 & heavier	Base	.10	.20
13 Ga.		.40	.25
14 Ga.		.20	.30
15 Ga.		.30	.40
16 Ga.		.40	.50
17 Ga.		.50	.60
18 Ga.		.60	.70
19 Ga.		.70	
20 Ga.		.80	

15¹/₁₆"

& wider Slitting. Pickling.

Ga. 12 & heavier	.30	.25	.25
13 Ga.	.40	.25	.30
14 Ga.	.50	.25	.35
15 Ga.		.40	.40
16 Ga.		.40	.45
17 Ga.		.40	.50
18 Ga.		.55	.55
19 Ga.		.55	.60
20 Ga.		.55	.65

Cutting to length without end

pieces 10% extra
Cutting to length 2'x4' 10c per 100 lbs. extra
Annealing 30c per 100 lbs. extra

Quantity Extras.

Extra
Less than 2,000 to 1,000 lb. inc. 15c per 100 lb.

Less than 1,000 lbs. 35c per 100 lb.

Terms: F.o.b. Pittsburgh, Pa., half of one per cent. discount for cash in ten days from date of invoice

LIGHT RAILS.

Base, per 100 lbs. f.o.b. makers' mill, including 10% short lengths, down to and including 24 ft. \$3.00

Subject to following list of extras and differentials for size, quantity, etc.:

Extras for Size.

25-lbs. to 15-lbs. per yard, inclusive	
full carload lots	Base
	Per 100 lbs. extra
16-lbs. and 20-lbs. per yard, inclusive	
full carload lots	\$3.45
12-lbs. and 14-lbs. per yard, inclusive	
full carload lots	.090
8-lbs. and 10-lbs. per yard, inclusive	
full carload lots	.135

Extras for Quantity.	
For less than carload lots, down to and including 5 gross tons	\$.945
For less than carload lots, under 5 gross tons .....	.09
Extras for Length.	
Special lengths down to, but not including 12 ft.	\$.09
For special length 12-ft. and under ..	.045
For all 30-ft. lengths .....	.045

Extras for Bond Drilling and Notching.	
Bond drilling, one hole in each end of web	\$.045
Bond drilling, two holes in each end of web .....	.090
Bond drilling, one hole in each end of flange .....	.090
Bond drilling, two holes in each end of flange .....	.18
Notching .....	.023

Paying for War.

Raising funds for prosecuting war and taking care of such debt as has been created is wholly a matter of how the various operations are conducted. There are right ways and wrong ways. The clearness with which financial experts understand the matter is equalled only by the obfuscation they produce in the minds of the laity when they undertake to elucidate. What is to a trade itself its nomenclature is to another trade a jargon. Unhappily, a jargon—or nomenclature—of finance is one to which the layman normally attaches suspicion. He is afraid "the bankers" want things to be so managed that they will profit by the particular system of management adopted.

The difficulty arises from the unconscious tendency to regard the nation as an individual, and draw for the nation the conclusion that would be correct for the individual. There is no parallel, not even a connection. The individual borrows from some one else and eventually must pay some one else, if he does pay. The nation borrows from itself. If it pays, it pays itself. If it fails to pay, it does not receive payment.

Speaking in round numbers, the British national debt was one billion at the beginning of the war, will be 30 billion next March, 40 billion the March following and 50 billion should the war end then, allowing ten billion for the transition back to peace. Our debt started at about a billion and may be 25 billion on the assumption just made as to the ending of the war.

These are staggering figures, but for every debtor there is a creditor. To the layman it is a transfer of money, from which viewpoint the sums are pre-

posterously great, while to the financier it appeals as a transfer of credit. The layman cannot understand the matter in terms of money and he grows very suspicious when asked to consider it in terms of credit.

Money and credit, which permit the operation of waging war to be conducted so smoothly, distributing the work so equitably, produce confused ideas. The whole thing can be considered without money and credit, and then the operations are much more clearly seen. There are two stages, the second really as important as the first, if not more important: (1) Waging the war; (2) Reducing conditions to the pre-war basis.

In waging war what should we do? Ignoring money and credit entirely, for it is a fact that war can be waged by people who have no money, who do not even know the term, what should we do? Some should fight. Some should prepare the materials for fighting. Some should provide the food, clothing and other necessities for those who fight and those who produce the material for fighting. There would be various other jobs to do, transporting materials and the like, but it is unnecessary to catalogue all the operations. If everyone were thus engaged, the war would be prosecuted with the greatest vigor of which such a nation was capable.

In the second stage there would be readjustments to be made. One man, whose work in prosecuting the war involved his staying at home and incidentally keeping his house in order and repair, would be as well off at the end of the war as at the beginning. Another, whose house had fallen into dis-

repair through his particular duty requiring him to abandon it, would find it in bad repair on his return. Each man should then do an equal share in repairing that one house. After all houses had been repaired, by the joint labor of the people and everything restored to its original condition, the second stage would have been passed through. The time involved would be longer or shorter, according to circumstances. The loss would be that no new houses would have been built. To offset that would be simply the fact that the war had been won.

Nobody, in this case, would have been engaged in producing or consuming unessentials. These would have been cut out. Now with a hundred million people the work cannot be so divided up, the Government telling each person what to do, one group of men to raise wheat, another group to make shells, and so on. All the Government can do precisely along this line is to pick out the group that is to fight. Finance enables us, if we use it properly, to conduct a war on the same principle as outlined above. Men are expected to produce the things most essential for war and, as far as is compatible with preserving the industrial and financial structure, to cease to produce, and consume, the unessentials. Then we have price control, to prevent any individuals from taking advantage of the situation. Finance not being accustomed, or adjusted, to dealing in such greatly increased transfers, it is desirable that there should be a moderate degree of what is called "inflation".

Leading up to the matter from this viewpoint, what the bankers have been telling us, that the Liberty Loans should be subscribed for largely by current savings, becomes elementary and obvious. The individual cannot save enough; hence there must be proviso for taking care of the balance, and distributing the saving.

While it is all outgo, material being consumed in waging war, and time being lost from productive enterprise, the country is under strain. That is the first stage. It appears like everyone is a debtor and no one a creditor.

Then comes the second stage, after the war. The condition is reversed, and

it appears like everyone is a creditor and no one a debtor. Taxes are levied to pay interest and then principal of the national debt. The money is disbursed, and those who receive have more to do with the spirit of the times than those who pay. The invariable "good times" of an after war period occur. The industrial activity, everybody working, is all right, but caution and conservatism are lacking. There is no economy. It looks strange but people conclude that after a war everything is bound to be different. It has been so after every war. The period lasted for seven years after our Civil War. Everybody seemed to be rich and prosperous, but when the crash came it was discovered suddenly that nobody really had anything. That is the plain statement. There are even men still living who can testify.

To avoid the unnecessary evils, what we need most in both stages of this thing, the waging of war and the adjusting of matters afterwards, is economy, of materials, of time, of effort. The most rigid economy will carry us through. The mere number of billions of debt or of annual interest does not matter, in itself, for when one pays, another receives. The first must not be ground down, the second must not be extravagant.

The money for war must be provided through various means and the respective size of the various channels through which it is expected to flow must be adjusted. For instance, there is one channel which is very useful indeed, as far as it can be employed, but it cannot be employed beyond a certain proportion. A patriotic man subscribes very largely for Liberty Bonds at 4%, borrowing money at 5% to make the payment. He contributes 1%. If his income tax is \$1,000 and he is willing to contribute another \$1,000, he can carry \$100,000 of bonds. As payment upon the principal of the bonds is made to him, he pays to his bank. The whole operation is conducted without a ripple, but only a certain proportion of the whole bond issue can properly be taken care of in this manner. The bankers, although most of us are rather suspicious of them, are really in position to lay down the best rules in these matters.

Looking Forward and Backward.

Business men are much more disposed than formerly to accept the judgment of those in state and military circles who look for a relatively long war, with 1919 as the earliest year in which a decision can be expected. At first they were disposed to form their own conclusions, and if their appraisal of the probable duration of the war fell considerably short of the public declarations of military or diplomatic experts they had recourse to the defense that the latter were talking of a long war for prudential or strategic reasons for the purpose of stimulating the public to a larger participation in the sacrifices and the work necessary to hasten its conclusion. It is the common observation now that business men are accepting the longer period as the more justifiable prediction.

Each day brings fresh demands for mobilization of all our possible forces, both of action and of denial, to further the work of war. The phrase "work of war", by the way, is becoming common. It is fully realized that in these modern conditions war is not fighting so much as it is work. The fighting men are but one branch of the whole service. It is a case of work.

As one regulation after another is promulgated, for the control of prices, of production, of consumption or what not, there is an instinctive tendency to consider that as a specific thing has been accomplished we are getting to the end, that soon the machinery for conducting the work or war will all be set up and that then all that will be necessary will be to keep the wheels turning. That, however, is not the case, and for the purpose of looking forward with clear vision, to see that much more still will probably have to be done, it is necessary to look backward. We have quite a period of time, if not a great period of achievement, to look back upon, but the helpful thing is to trace the course of thought during the time since the war was thrust upon us, almost ten months, as a matter of fact. The first thought of the steel industry was with respect to the amount of steel that would be required. This was estimated in some quarters at 15 to 20% of the total out-

put. It was really a common view that the principal thing that would occur would be that the tonnage, whatever it would prove to be, would simply be subtracted from the total, and every thing else would move along much as before. Later the market's action encouraged the view that steel would be made still scarcer, that there would indeed be a terrible famine in steel. There was objection, in some quarters, to the Government securing its steel at less than the market price, because that would tend to disturb market prices. Later there was even expressed the view, in some quarters, that the Government securing steel at relatively low prices would result in prices being still higher to the general public. Then came President Wilson's appeal, July 12th, for "one price for all" and that created a storm of discussion, quite a common view expressed being that the principle would not work, that the thing could not be done.

Thus a look backward is not a comfortable one as to the store we should set by our judgment, as expressed in the early months of war. By as much, however, as the retrospective look is uncomfortable it is illuminating and may serve as a guide to what is to be expected in future. It must not be concluded that the chief things are done, or that things that have not been done cannot be done. There is just as much more in future, perhaps much more. All the individual can do is to strive to be quick to "catch on" as new possibilities arise for devoting the strength of the country to the work of war. Judgment is even more essential than ever, for the fact that sweeping changes have been effected in our industrial and other activities suggest that changes of this sort can be made, and yet there are changes that cannot be made and judgment must be exercised to avoid attempting the impossible. Looking backward one sees that opinions must be revised as to what is possible but it would be an egregious blunder to assume that since some seeming impossibilities have turned out to be possibilities that all seeming impossibilities can undergo the same conversion.

Relation of Production and Scientific Distribution.

By H. L. Gantt.*

When the great European war broke out in the summer of 1914 the industrial conditions of the whole world were jarred on their foundations, and for a while the machinery practically stopped. In this country the law of supply and demand failed to act, because there was no demand. Plants were shut down, people thrown out of employment, and for months we had a very serious stagnation of business.

Today again, our cherished law of supply and demand has gone to pieces, the conditions now being reversed for the demand far outruns the supply, and prices for material and labor are soaring to unheard-of heights. Wage increases followed by increase in selling price and in freight rates seem to have become a habit, yet everyone who thinks on the subject realizes that they do not solve our problem, but only increase the complications of the situation.

Past Experience No Guide.

Because of the fact that we have been so prosperous in the past and that these lapses in our business system have not caused any very great distress to those who direct that system, the seriousness of the now demonstrated fact that, as at present constituted, the business system will not stand the strain of such times as these, has not been fully appreciated.

The periodic "panics" have always been taken as normal to any business system, but the shock of 1914, and the present condition seem to indicate that they were only symptoms of what would happen if we should have such an industrial crisis as the one toward which we are apparently heading.

Many of our leading financiers, econ-

Adrift on Unchartered Waters.

omists and business men admit that the theories to which they have pinned

their faith in the past seem no longer to hold good. They realize that all ties with the past have been severed and that they are now adrift on uncharted waters. In other words, our whole business system is weakening, and is being held together by emergency patches.

Dangers Ahead.

Strenuous days and troubled waters are ahead of us: can we navigate safely in a craft which shows so many signs of leaking as soon as we cast off? We certainly cannot develop any very high degree of fighting power if we are forced to devote any large proportion of our energy to keep our ship afloat. The attempt to solve this problem by increasing wages and prices is about as effective as trying to raise oneself by his bootstraps.

Weakness Present Business System.

Most people realize this and in their despair reluctantly turn to the Federal Government which is an admission, whether we realize it or not, that in failing to perform a function which it has jealously regarded as its own, the business system has shown a fatal weakness. How else can we explain the surrender of a prerogative which is as essential to its life, as now lived, as are the iron ores of Lorraine to the economic life of Germany? I protest that this is not a problem for the Federal Government, but for business, and the fact that the Federal Government has been obliged reluctantly to take over work that belongs to the business system is a most serious arraignment of that system.

By to-day's paper we note that the Comptroller of the Currency has come to the rescue of the banks and directed his inspectors to exercise "an intelligent and conservative discretion" as to the prices at which banks may continue to carry securities of unquestioned value. The business system thus again turns to the Federal Government for

* In Journal of American Bankers' Association.

help at the point where it was supposed to be strongest.

I submit as a general proposition, that any system that cannot solve its own problems but has to pass them on to others, is fundamentally weak, and needs rectification, not patches.

Futility of Price-Fixing.

But to return to the subject of prices, which is uppermost in the minds of all.

An attempt is now being made to stem this tide by price and priority fixing under Government authority. So far, this has not been entirely satisfactory, and in many individual cases the cure has been worse than the disease. It is only fair to say, however, that even the most strenuous advocates of Government control did not expect it would be entirely satisfactory, but have advocated it as the best emergency measure in sight.

As we proceed along this line however, it becomes clearer and clearer that the fixing of the price of one commodity will necessitate the fixing of the price of all commodities, which we recognize at once is beyond the ability of any government, much less one already overloaded with the direction of a great war for which it was not prepared and is not trained.

Drift to Government Control and Socialism.

In spite of this fact we seem to be drifting toward government control, which smacks so strongly of socialism that it is perhaps hardly distinguishable from it. Only a very small minority of the people in this country want socialism, or have any faith in it. The example of Russia should cure even that few of any desire to try it.

The real problem before the business men of the country then is to take such steps as will stop this drift before it goes too far.

Opposed to American Individuality and Initiative.

Americans in general are individualists. We have been brought up to believe in individual liberty, individual initiative and individual enterprise. We realize, however, that as individualists we cannot make successful war upon a country whose business men as well as army, are forced to co-operate un-

der one autocratic leadership. The tremendous power which Germany continues to exhibit is undoubtedly due to this singleness of purpose. If we can develop in this country a singleness of purpose comparable with that which Germany has developed, we can undoubtedly win; but the method by which they have obtained their singleness of purpose—autocratic military authority—is just as abhorrent to us as socialism. We must, therefore, find some other standard around which all our strength can be rallied.

Money Not Necessarily Power.

Our business system has in the past been founded on the theory that money is power and that if we can only get money enough we can do anything. The war has clearly demonstrated that money is not necessarily power, but only the means of purchasing power, provided that power is purchasable. We begin to realize the truth enunciated by the ancient philosopher when he said to a man who came to him boasting of his wealth. "What availeth all thy wealth? He that hath better iron than thou will come and take away all thy gold." In other words, we can't shoot money at Germans effectively, but we must transform it into food, clothing, munitions, transportation facilities, etc. Under the present conditions, the great need is for transportation facilities. Russia is powerless for lack of them.

Ability to Produce Constitutes Power.

We seem to be able to raise all the money we need, but we shall have to transform that money into fighting power as quickly as possible. This transformation must take place, not through the efforts primarily of financiers, but through the efforts of industrialists—men who can use tools, who can produce food clothing, weapons, etc. In other words, a man's ability to produce is rapidly becoming the measure of his value to the community, and the events which are now so rapidly taking place will surely bring him a corresponding recognition.

As long as there was a surplus of goods and the trader was allowed to juggle with them for his own profit, production was practically ignored, for

there, was much more profit in juggling than in working; but when the demand for goods so enormously outruns the supply and the operations of the trader are restricted, productive capacity commands a premium such as has never before been known. It thus becomes unmistakable that the most important men in the community to-day are not the financiers, nor the lawyers, nor even the law-makers, but the men that can produce the much-needed goods. No matter how unprepared we were from a military standpoint and how slow we may be in making such preparations, everything will have to wait on our industries, where competition of the keenest sort is now attracting men of the greatest ability.

Distribution the Problem.

Having produced the goods, for I anticipate that the tremendous increase in our productive capacity now being prepared will produce the goods, the question immediately arises as to how they shall be distributed. Are we to have competition for them among individuals and between individuals and the Federal Government, or are the products of our industrialism to be distributed in such a manner as will produce the greatest benefit to the whole community? It is unthinkable that in time of war the former method is to be followed. The price and priority fixing which has already been done is an effort to prevent just that thing. As has been said before, however, to attempt to fix the prices of all the commodities is a job too big for the Federal Government, even if it had nothing else on its hands and had a fit mechanism. It is a business proposition and must be handled by business men.

Co-operation and Association Necessary.

The California Fruit Growers' Association has shown us at least a partial solution of this problem. The supply and price of oranges are both perhaps more uniform than in the case of any other fruit. Is it not possible for business leaders in other industries besides the fruit-growing industries to form associations for the distribution of their commodities? Such associations might supply the markets uniformly with pro-

ducts at prices which would be approximately constant, eliminating speculation by charging for their services a fair compensation which should be commensurate with the service rendered.

This is roughly the scheme of the German cartel system which has done so much to advance the cause of German industry, although it has only scratched the surface. The problem before such an association or series of associations is so vast that it almost staggers the imagination. When we realize, however, that the attempt to accomplish substantially this result is now being made by the Federal Government with its limited resources and experience, by means of price and priority fixing, it becomes clear that it is a problem which should not be undertaken by the Government at all.

The only reason why it is being thrown upon the Government is that there is no other organization which is devoted solely to the public service. All business associations are organized primarily for profit, and only secondarily for production, or public service. Inasmuch as the real need to-day is for goods, not profits, the business organizations cannot solve our problems until they have a change of heart. Until that change comes government control or ownership seems the only measure that offers any hope in the present emergency. Nobody, however, who thinks on the subject really believes in it as a permanent solution.

The only solution is through associations of business men, who make public service their prime motive, and are willing to dedicate their services to the community in the same manner in which the soldiers who are going to Europe have dedicated their lives.

It Can Be Done.

The American Railway Association has made a start in this direction. It is confessedly only a start. Nevertheless it has worked such wonders with our railroad transportation that people are already asking how the methods it has developed can be perpetuated. Some large shippers have said that a return to the old methods was unthinkable. When we realize that these results have been accomplished in spite of laws de-

signed to prevent this very thing, we begin to get some idea of the possible economic value of co-operation in transportation, unhampered by the Sherman law, and not in need of the services of the Interstate Commerce Commission.

It has been suggested that such a result might be permanently achieved if the Railway Association should be incorporated as a holding company having no common stock, and should take over all the railroads of the country by issuing its bonds and guaranteed stock for the securities of the railroads. While this is not the place to discuss the details of such a corporation, I am assured by those who are most interested in the subject that there are at least no legal difficulties in the way of its accomplishment. Such a corporation would be the first real public service corporation the world has ever seen, for, there being no common stock to absorb profits, all such profits would be devoted to the improvement of the plant. It might serve as a model for innumerable corporations for the distribution of commodities.

Effects of Competition Vary.

The ideas above stated were first advanced by an economist of international reputation, who before the war studied the economics of big business in all the capitals of Europe and whose predictions made in 1915 have been absolutely verified. He tells us also, what we already knew that competition in production has a tendency to increase the amount of product and the economy of production, while competition in selling and distribution invariably increases the cost of both. The great waste of energy evidenced by the methods of ice and milk distribution, illustrates the latter fact sufficiently, not to say anything about the paralleling of railroads. Inasmuch as we shall be forced not only during the war, but after its termination, to conserve every possible ounce of energy that we can produce, it would seem rational that we should adopt as soon as possible the methods which will lead to that result.

Production Requires Competition, Distribution, Co-operation.

While co-operation is very helpful in

production, it is seldom that, in manufacturing processes at least the best results can be obtained without competition in which the greatest rewards go to the most successful. In other words production is naturally an individualistic process, as distinguished from a socialistic process.

On the other hand, distribution is essentially a socialistic process, for competition when carried to its logical conclusion invariably increases its cost. This is so true of selling, which is a part of distribution, that the cost of selling an article is often several times that of production.

The business system of the future can thus be neither exclusively competitive nor exclusively socialistic, but must be so devised that each method can be used in its proper place. If the selling and distributing of a product is done for the benefit of the whole community, our present methods of production will be entirely satisfactory.

For instance, if the whole product of an industry is handled by one selling and distributing association for the benefit of the whole community, surplus and storage can be equally guarded against and the producers, large and small, can be assured a fair price for their product.

Requires an Industrial, Not a Government Leadership.

Under such conditions, producers will prosper according to their ability, and the great organizers and executives will find a field for their ability in organizing and operating the great distributing associations.

Under such leadership the productive capacity of country would go forward by leaps and bounds, and we should become not only the greatest producing nation in the world, but, because military power depends upon tool power, we should soon be recognized as the most powerful nation in the world.

When some great nation has thus shown the way through its industrial leaders to unbeatable tool power, and not until then, is universal peace possible. The opportunity lies with the United States, and depends upon our industrial leaders.

The Coke Situation.

Pig iron production, and therefore steel production, has been depending so largely of late on the supply of coke that it may be well to review the statistics. Undue prominence has perhaps been given to the situation with respect to Connellsville coke, both because the shortage has been greatest with respect to the coke from that famous district and because there are weekly statistics of Connellsville coke production and shipments, gathered faithfully for many years by the Connellsville Courier. There are no statistics of production of coke elsewhere, except the annual statistics of the Geological Survey, and the trade may in consequence fail to consider fully the importance of coke production outside the Connellsville region. There is the further peculiarity that Connellsville coke was for many years the chief blast furnace material, and the standard, while on account of its being practically detached from any particular blast furnace district, and shipping its product long distances there was a natural tendency to depend upon the region when anyone ran short.

Below we give the coke statistics, in net tons, for the past two calendar years, the United States production as reported by the Geological Survey, the production of the Connellsville and Lower Connellsville region (beehive exclusively) and the consumption by iron blast furnaces, as reported by the American Iron and Steel Institute:

	1915.	1916.
U. S. production ...	41,581,150	54,533,585
U. S. beehive	27,508,253	35,464,324
U. S. by-product	14,072,895	19,069,361
Connellsville	17,021,216	21,654,502
Blast furnace consumption	33,224,328	44,431,905

Thus in 1916 the proportion of the total coke production that was used in iron blast furnaces was 81.5%. The proportion of the total output furnished by the Connellsville region was 41% in 1915 and 40% in 1916. In other words, the Connellsville region rose to the occasion, for there was so much building of by-product coke ovens in direct connection with existing blast fur-

nace plants that the proportion of Connellsville coke might easily have been expected to decline very considerably.

Statistics recently presented by the Courier showed that the average weekly production of Connellsville coke in the first nine months of 1916 was 425,000 tons, while the weekly average in the first nine months of this year was 356,000 tons. This was a decrease of 16%, while the production of pig iron in the country at large decreased but very slightly. Nearly all the loss in Connellsville was made up by gains elsewhere, particularly of course in the output of by-product coke. The Connellsville region, incidentally, furnished much of the coal for those operations.

In the past seven weeks, when the further restriction in Connellsville output has obtained, the shipments have averaged 304,000 tons weekly, representing a further decrease, figured on the 425,000 ton rate of the first nine months of last year, of 12%, that is, first a decrease of 16% and then a decrease of 12% more or 28% in all.

Nevertheless the country has been making substantially as much pig iron, in the past two months, as in 1916. If the Connellsville region were able to ship 425,000 tons of coke a week instead of 304,000 tons, there would be 121,000 tons more coke a week. That would mean ability to produce 5,140,000 tons more pig iron a year, provided the proportion of Connellsville coke used in blast furnaces was only equal to the proportion that obtained in 1916 with respect to the country's entire coke production. As a matter of fact Connellsville coke is used more generally for blast furnaces than is other coke, so that the amount of pig iron that could be made from this increased Connellsville supply would be still greater, perhaps nearly 6,000,000 tons. Of course there is not sufficient furnace capacity to utilize such an added amount of coke, probably barely half enough.

What occurred was that the Connellsville coke production decreased

too much. It would have made no trouble if it had decreased somewhat less, say half as much, as the deficit would have been made up elsewhere. Correspondingly, the region does not need to get back to its old gait. If

it could run half way between its rate of the first nine months of last year and its rate of the past few weeks the existing blast furnaces would be well taken care of.

Railroad Unpreparedness for Peace.

The inability of the railroads to handle properly all the freight that is offered them is not a case of unpreparedness for war, it is a case of unpreparedness for peace. There is remarkable industrial activity, it is true, but are we supposed to have great industrial activity only in time of war? If there is a difference it is in the other direction.

Prosecuting the war does not directly and in itself add greatly to the freight traffic. The cantonments had to be built, it is true, but they are built now and the burden of freight upon the railroads remains heavier than they can bear. There was less building elsewhere than there should be in good peace times. The cantonments have to be supplied with food, etc., but the men would have eaten if they had stayed at home. If the food has to travel farther in order to find the man because he is in a cantonment the cantonment has been poorly located. When these men were at work at home they occasioned freight movement, raw material to the industrial establishments in which they worked, and finished product away. All that is shut off so far as they are concerned.

War munitions do not average a greater weight in proportion to the work put upon them than do the commodities of peace. If men are employed on war materials it should not mean more freight than if they were working on peace materials.

As to the movement of men to the cantonments in the first place, and their travel back and forth on furloughs, as well as troop movements to the seaboard, that was all taken care of by

reducing regular passenger service. Freight movement is not impeded on that account, but rather the reverse.

There is no escape from the conclusion that present conditions show that the railroads were altogether unprepared for great industrial activity, such as the country has a right to have. The railroads are no more unprepared for war than for peace.

Now we are likely to have a remedy, a temporary remedy, purely a war measure, through the elimination of reduction by Government decree, of certain thus far unnamed industrial operations. There is a misapprehension in some quarters as to the nature and origin of the proposal. It is not a railroad proposal. It is a Government proposal. The Government sought information and nowhere could it secure it nearly as well as from the railroads, hence the railroads were asked to prepare a list of commodities possibly unessential. This they did, to the extent of 525 commodities. They did not demand, or even request, that any or all of these commodities should be embargoed.

If the thing is done, obviously demand is going to bank up, to be expressed after the war, and if we have full industrial activity then, the condition as to railroad transport will be still worse. It is all very well to say that winning the war is the whole thing, and that nothing else counts, but we ought to be able to pick out the best way in which to win it. If there is to be nothing after the war it is not worth while to win it. This problem of the railroads should be solved both for the war and for after the war.

Topical Talks on Iron.

LVI.—Historic Low Prices.

There is attraction in opposites, hence, a reference to the historic low prices for iron and steel may not be out of line at this time. In nearly all iron and steel commodities the lowest prices fell in the summer of 1897. It is customary to regard the long range fluctuations in prices as being produced by permanent laws, action and reaction, a swinging of the pendulum, so that there is nothing new under the sun, and what occurs once will occur again.

In the history of iron and steel prices these influences have been of great importance, but they have not been the only influences. There were two influences in the case of the historic low prices that were not of such a nature that they would be expected to be repeated. The first was the discovery and rapid development of the great Mesabi iron ore range in the Lake Superior district. The other was the change from wrought iron to mild steel, as the ordinary material of commercial application. It is, of course, conceivable that another great deposit of iron, ore, rich, accessible and easily mined, may be discovered, but it is improbable. If accessible, it presumably would have been discovered before this, and it could not be much richer, as the Mesabi bodies first mined in large quantities were almost chemically pure, except for the necessary oxygen.

It is also conceivable that an entirely new process for making a commercial wrought ferrous product may be discovered of such character as to require the building of new works, but that is utterly improbable. When mild steel came to supplant wrought iron there were the new steel works and the old iron mills, where there was not room for all members of the two classes, and the natural struggle resulted.

Some of the other influences that produced such low prices in 1897 might, and probably will be, duplicated, but

it seems altogether improbable that the purchasing power of the gold dollar will ever be anything like what it was in 1897. That was the year after Mr. Bryan's campaign for the free coinage of silver, because he thought there was not enough gold.

Measured in terms of the values of other commodities, or with allowance for change in the general purchasing power of the gold dollar, steel may conceivably become cheaper, relatively than in 1897. There would have to be very strong competition, and improvements in processes would have to make up for the fact that much leaner ores must be smelted. In 1897 the cream of the Mesabi iron ore deposits was being skimmed, and coke and limestone consumption per ton of pig iron produced was at the record low point. The amount of material upon which freight had to be paid, for assembly at the blast furnaces, was correspondingly small.

In July, 1897, Bessemer pig iron reached \$8.75 at valley furnaces. Bessemer billets sold at \$13.75, Pittsburgh, in May, 1897. Ore prices for the season ranged, according to quality, from \$2.10 to \$2.30 for Mesabi Bessemer and from \$1.80 to \$2 for Mesabi non-Bessemer, at Lake Erie docks. Nearly all the money went to pay freights, the cost of mining being almost inconsequential while the royalties were very small.

The depression in the iron and steel industry became marked in the fore part of 1893, the great panic coming in the June following. Except for the "soda water rise" of 1895 the depression was continuous for several years. The lowest prices did not come at once, because it required years for costs to reach their lowest points. In 1898 prices were almost as low as in 1897, yet some concerns made moderate profits in 1898 while in 1896 with prices not as low, profits were almost exceptional.

Steel Plants.

XXV.—Donner Steel Company.

In 1905 the New York State Steel Company, Spencer Kellogg, president, undertook the erection of a steel plant at Abbott Road, Buffalo, N. Y., some ten miles south of Buffalo proper, on the Erie Railroad. The original plant comprised two 200-ton Talbot tilting open-hearth furnaces. Production of steel did not begin until April 18, 1907, at which time the older steel works were well equipped with orders to operate about six months longer, but new works found it very difficult to effect sales. A blast furnace, "Nellie B" on which construction work was commenced late in 1906, was not available, and pig iron was high priced. For these and other reasons the plant was not a success and went into receivers' hands when financial conditions became so poor later in 1907.

In December, 1915, W. H. Donner, who had been president of the Cambria Steel Company for several years, purchased the property, the Cambria Steel Company shortly afterwards passing to the control of the Midvale Steel & Ordnance Company. To the original steel making equipment of two 200-ton tilting furnaces there had been added a 65-ton stationary furnace, and Mr. Donner proceeded to add five stationary furnaces, making a good sized steel plant with a capacity of over 200,000 tons of ingots annually, well balanced with the blast furnace, 85x21 feet and with a capacity of about 150,000 tons

of pig iron annually.

Mr. Donner entered the iron and steel industry as one of the builders of a tin plate plant at Anderson, Ind., known as the National Tin Plate Company, which began operations in August, 1905, with a six mill plant. Then he projected the National Tin Plate Company of Pennsylvania, establishing the industrial town of Monessen, up the Monongahela River from Pittsburgh. This plant started with six mills, early in 1898, and operated on a system invented and patented by Mr. Donner. The plant was absorbed by the American Tin Plate Company upon its formation late in 1898, being subsequently enlarged to 25 mills. Then Mr. Donner with associates, established the town of Donora, named more or less after him, and built a wire plant with steel mill and blast furnaces, the company, called the Union Steel Company, reflecting the fact that H. C. Frick was associated in the matter, as the word "union" is attached to a number of Mr. Frick's interests. The Union Steel Company absorbed the Sharon Steel Company late in 1902 and shortly afterwards was taken over by the United States Steel Corporation on the basis of the corporation guaranteeing the bonds while the sellers subscribed for bonds in addition to those already issued. Some years later Mr. Donner became president of the Cambria Steel Company.

The Iron and Steel Situation.

A Month of Set Prices.

On November 5th the last prices set by the War Industries Board were announced, and while some regulations were still to be promulgated by the American Iron and Steel Institute the steel market had practically a whole month of set prices. The market was more active under the set price conditions than had been expected would be the case, the volume of business done being fairly large, considering the well sold up condition of most of the mills. Activity was greatest in the sheet branch, the independents booking about 140,000 tons of business, perhaps one-half greater than a month's output. There were fairly large bookings in wire products and tubular goods. In bars, shapes and plates, prices for which had been set September 24th, the amount of business was decidedly limited, mills being still well sold up on old orders.

The volume of specifications filed in November against old contracts was larger than was the case in October but otherwise the month made a poor comparison with preceding months. There was some falling off in specifications even in the case of contracts at less than the set prices.

Government Orders.

From any viewpoint the volume of sales in November would be considered a poor one, if commercial orders only were taken into account. Of the amount of Government business placed there is only fragmentary evidence, as there is a well defined policy of withholding details in the case of Government orders. Immediately the original price agreement was made between the Government and the steel industry, as announced September 24th, Government orders began to be placed with more freedom, and the volume has been increasing rather steadily to date. The amount of Government tonnage placed in November was far in excess of the amount of Government steel expected to be produced in any one month, as orders were placed for forward deliv-

eries. Shell steel orders, for instance, were placed in many instances to run for delivery as late as June 15, 1918, while orders for ship steel also involved delivery over a considerable period.

Through a speeding up in the merchant shipbuilding program due to the adoption of additional plans for standardizing vessel construction and reducing the number of types, steel for shipbuilding, both plates and structural shapes, has been arranged for a heavier monthly delivery than seemed feasible two months ago, and it is now probable that the new program of 6,000,000 tons deadweight of vessel construction in 1918 will be exceeded rather than fallen short of.

Proportion of War Tonnage.

The shell steel requirements of the Government are proving larger than had been anticipated. The Government program appeals to involve the employment of all the shell making facilities that were employed in 1916 for making shells for the Allies, plus all capacity that can be established in other plants, plus a considerable Canadian capacity that is being employed, and as shell steel exports to our Allies are to be continued in is certain that when full operation of the program is reached the amount of shell steel produced will be far in excess of any rate hitherto attained, the former high point having been in 1916.

Apart from such Government requirements as may be developed in connection with the railroads of the United States, to be referred to later, the war requirements of the Government and its Allies are likely to be running very shortly at the rate of a million tons of rolled steel a month, if indeed that rate has not already been attained. A million tons a month would be 35% of a production of 33,000,000 tons of finished rolled steel a year, which is approximately the rate of production in recent months.

Concerning various statements of large percentages of the capacity of

generically is the executive committee of the American Railway Association but which in substance is the railroad activity for prosecuting the war, held a series of conferences with various departments of the Government, including the Interstate Commerce Commission. As a result of these conferences, the Railroads' War Board at the end of the week ordered that the railroads east of Chicago pool their facilities to the extent necessary to produce the fullest possible movement of freight. The conduct of the pool was entrusted to seven railroad operating officials, designated as the General Operating Committee, which at once established headquarters in Pittsburgh and subsequently appointed subsidiary committees in various cities.

Orders were at once issued, chiefly in the nature of "first aid to the injured", calculated to improve traffic conditions, and particularly to relieve the

congestion in the Pittsburgh district. Various embargoes were laid, including an embargo against shipments of iron and steel for export, as there was 1,325,000 tons of iron and steel at sea-board awaiting vessels. Then the committee addressed itself to the formulation of a general program.

Commission Recommends.

Congress assembled ten days after the pooling of facilities had been ordered and on the third day of its session the Interstate Commerce Commission made a report to Congress, upon its own initiative. It had been considering the re-opened 15% rate case and declared that no advance in freight rates would meet the situation. Railroad earnings were large and with the Government so large a borrower an advance in rates was not the way in which to improve railroad facilities, as it would be difficult both to borrow

Finished Steel Prices.

(Averaged from daily quotations, f.o.b. Pittsburgh.)

	Shapes	Plates.	Bars.	Pipe.	Wire.	Grooved		— Sheets —			Tin plate.	Comp. Fin. steel.
						Wire Nails.	Steel Skelp.	Black.	Galv.	Blue Anneal.		
1916.												
January	1.87	1.90	1.87	76¼	1.98	2.13	1.75	2.60	4.75	2.55	3.75	2.1410
February ..	2.06	2.16	2.06	75½	2.11	2.26	1.94	2.60	4.80	2.65	3.83	2.2988
March	2.36	2.53	2.36	73¾	2.25	2.40	2.24	2.73	4.93	2.85	4.20	2.5579
April	2.50	2.75	2.50	71½	2.25	2.40	2.35	2.89	5.00	2.95	4.70	2.7166
May	2.50	2.83	2.50	70	2.45	2.50	2.35	2.90	5.00	3.00	5.46	2.8043
June	2.50	2.90	2.50	70	2.45	2.50	2.35	2.90	4.80	3.00	5.75	2.8300
July	2.50	2.90	2.50	70	2.45	2.50	2.35	2.90	4.40	2.90	6.00	2.8425
August ...	2.54	2.94	2.56	70	2.53	2.58	2.35	2.90	4.20	2.90	5.54	2.8588
September .	2.60	3.00	2.60	69¼	2.55	2.60	2.35	2.91	4.20	2.90	5.75	2.9013
October ...	2.63	3.07	2.62	69	2.59	2.64	2.40	3.23	4.50	3.15	5.77	2.9747
November .	2.86	3.33	2.76	68½	2.79	2.84	2.75	3.72	5.34	3.66	6.40	3.2036
December ..	3.03	3.53	2.93	66	2.95	3.00	2.85	4.40	6.27	3.65	7.18	3.4679
Year	2.50	2.82	2.48	70¾	2.45	2.53	2.34	3.06	4.85	2.99	5.34	2.8009
1917.												
January	3.11	3.61	3.00	64	2.95	3.00	2.85	4.50	6.50	4.25	7.23	3.5249
February ...	3.25	3.75	3.00	62¾	2.95	3.00	2.85	4.63	6.75	4.50	7.83	3.6529
March	3.52	4.33	3.27	60¼	3.13	3.18	3.50	4.90	7.00	4.70	8.00	3.9454
April	3.70	4.50	3.39	55	3.23	3.28	3.50	5.88	7.40	5.40	7.60	4.1965
May	4.00	4.50	3.64	49	3.45	3.50	3.75	6.73	9.00	6.70	8.00	4.5272
June	4.25	7.10	4.00	49	3.66	3.71	5.00	7.50	9.75	8.00	8.00	5.1587
July	4.50	9.00	4.50	42	3.95	4.00	6.00	8.00	10.50	8.25	8.00	5.7975
August ...	4.50	8.96	4.50	43¼	3.95	4.00	5.50	8.00	10.35	8.00	8.00	5.7161
September .	4.06	7.05	3.88	49	3.95	4.00	5.00	8.00	9.75	8.00	8.00	5.1865
October ...	3.00	3.95	2.90	49	3.95	4.00	3.68	7.32	8.90	7.50	8.00	4.1449
November .	3.00	3.25	2.90	50½	3.33	3.58	3.90	5.06	6.37	4.43	7.79	3.9198

money and to spend it. Congress was advised either to provide that the railroads form a pool for the entire country the anti-pooling laws being suspended, or to provide for the Government taking over the operation of the railroads entirely. There is reason to suspect that the Commission favored the pooling method and the partial pooling already accomplished by the railroads may have been undertaken in expectation that a complete pooling would eventually be sanctioned by law. Congress will probably deal with the matter promptly.

Bearing on Steel.

The providing for a greater freight movement is intended largely for the purpose of stimulating the production of iron and steel, one of the greatest essentials in the prosecution of war, and it is reasonable to expect that as months pass there will be a heavier traffic movement and greater iron and steel production. That is one reason to be expected from operations looking to the putting of the railroads on a new basis, whatever program be adopted for the purpose. However the problem be attacked, the Interstate Commerce Commission indicates, and general belief has it, that steps will be taken to provide, under the Government's priority and other authority, a large number of additional locomotives and freight cars. The locomotive shops, already working at a fair rate, on the whole, would be speeded up further, and the car shops which have hardly been operating at more than half capacity for a long time past, would be given much greater employment. A large additional tonnage of steel would be required from the mills, under priority orders. This steel would include

plates, and a careful study of the plate situation, made about the middle of the month, showed that even with the increased requirements of the merchant shipbuilding program the country has some plate capacity to spare for war purposes, although after a car building program has been undertaken there may be no plates at all, of character suitable for ship or car construction, available for ordinary commercial purposes.

The Future.

The question of how the country's commercial requirements in steel and the supplies available after all war requirements are covered will compare in future is a very difficult one. The situation will not stand still long enough to be appraised. The demand for steel for commercial purposes has been constantly decreasing for several months, while the requirements for prosecuting the war have been increasing as rapidly. Where either trend will stop no one can say. As a rule the case of the individual consumer of iron and steel is not clear. He may see his operations decreasing from week to week and suddenly be met with an overture from the Government that his facilities be applied to war work, whereupon his consumption may be greater than formerly. The Government, indeed, is vitally interested in reducing the volume of unessential industrial operations, but is proceeding as far as possible by the method of providing substitute work. After all it may be found that one influence will balance the other and that all facilities will be kept busy despite the great changes occurring in the character of the material produced or consumed.

Railroad Earnings.

Per mile of road, compiled by Bureau of Railway Economics.

	1913-14			1914-15			1915-16		
	Revenue.	Expense.	Net.	Revenue.	Expense.	Net.	Revenue.	Expense.	Net.
July	\$1,183	\$837	\$346	\$1,127	\$786	\$341	\$1,130	\$750	\$380
August ..	1,244	856	388	1,174	788	386	1,190	764	426
September	1,257	854	403	1,185	785	402	1,251	774	477
October .	1,314	891	423	1,171	787	384	1,323	815	508
November	1,180	884	337	1,026	734	292	1,303	801	502
December.	1,116	821	296	903	730	263	1,253	802	451
January ..	1,021	795	226	939	718	221	1,133	798	335
February .	914	746	168	900	680	220	1,141	801	340
March	1,091	801	290	1,015	722	293	1,260	844	416
April	1,038	782	256	1,013	724	289	1,223	827	396
May	1,047	800	247	1,044	735	309	1,306	856	450
June	1,097	789	308	1,094	732	362	1,301	851	450
Fiscal year	13,483	9,801	3,682	12,678	8,915	3,763	14,818	9,684	5,134

	1916-17			1917-18		
	Revenue.	Expense.	Net.	Revenue.	Expense.	Net.
July	\$1,315	\$848	\$467	\$1,507	\$1,029	\$478
August ..	1,418	882	536	1,581	1,066	515
September	1,410	882	528	1,547	1,053	494
October .	1,466	910	556			
November	1,396	894	502			
December	1,345	905	440			
January ..	1,301	930	371			
February.	1,147	899	248			
March ...	1,373	992	381			
April	1,383	986	397			
May	1,498	1,034	464			
June	1,514	1,020	494			
Fiscal yr.	16,565	11,181	5,384			

Wage Scale Averages.

Sworn averages of prices obtained by mills for shipments in months named, used in fixing wages under Amalgamated Association sliding scales.

Bar Iron.

	1914.	1915.	1916.	1917
Jan.-Feb.	1.1590	1.024	1.40	2.35
Mar.-April	1.176	1.087	1.60	2.45
May-June	1.1257	1.10	1.85	2.65
July-Aug.	1.0928	1.15	1.95	2.75
Sept.-Oct.	1.0847	1.15	2.00	2.85
Nov.-Dec.	1.037	1.30	2.15	
Year's av.	1.1125	1.144	1.83	

Sheets and Tin Plates.

Sheets. Tin Plates.

	1916.	1917.	1916.	1917
Jan.-Feb.	2.25	3.40	3.50	4.95
Mar.-April ..	2.50	3.90	3.70	5.75
May-June ...	2.60	4.45	3.90	6.85
July-Aug. ...	2.70	5.00	4.05	7.75
Sept.-Oct. ...	2.75	5.35	4.10	8.35
Nov.-Dec. ...	2.80		4.25	
Year's av. ...	2.60		3.92	

Pig Iron Production.

Rates per annum, including charcoal pig.

August	39,200,000
September	39,300,000
October	41,700,000
November	40,700,000
December	37,700,000
January, 1917	37,460,000
February	34,750,000
March	38,600,000
April	40,900,000
May	40,600,000
June	37,200,000
July	39,700,000
August	38,600,000
September	38,500,000
October	39,250,000
On November 1st	40,200,000
Average since January 1st	38,900,000

Actual production:

1910	27,303,567
1913	30,966,162
1914	23,332,244
1915	29,916,213
1916	39,434,797

Comparison of Metal Prices.

	Range for 1915		Range for 1916		Range for 1917		Closing, Nov. 30.
	High.	Low.	High.	Low.	High.	Low.	1917.
Pig Iron.							
Bessemer, valley	21.00	13.60	35.00	20.00	56.00	35.00	36.30
Basic, valley	18.00	12.50	30.00	17.75	54.00	30.00	33.00
No. 2 foundry, valley	18.50	12.50	30.00	18.25	53.00	30.00	33.00
No. 2X fdy. Philadelphia.	19.50	14.00	30.75	19.50	52.75	30.75	33.75
No. 2 foundry, Cleveland .	18.80	13.00	30.95	18.50	54.30	30.95	33.30
No. 2X foundry, Buffalo.	18.00	11.75	35.00	18.00	53.00	33.00	33.00
No. 2 foundry, Chicago ..	18.50	13.00	30.00	18.00	55.00	30.00	33.00
No. 2 South'n Birmingham	14.50	9.25	25.00	14.00	48.00	24.00	33.00
Scrap Iron and Steel.							
Melting steel, Pittsburgh.	18.00	11.00	27.00	16.00	47.00	22.00	29.75
Heavy steel scrap,, Phila. .	16.25	9.50	24.50	14.75	42.00	20.50	27.00
Heavy melt. steel, Chicago	15.25	8.75	24.00	14.50	43.00	21.50	28.50
No. 1 R. R. wrought, Pitts.	17.25	10.75	29.00	17.50	47.00	19.50	34.00
No. 1 cast, Pittsburgh	15.00	11.00	23.50	14.75	38.00	19.75	26.50
Iron and Steel Products.							
Bessemer rails, mill	28.00	28.00	38.00	28.00	38.00	38.00	38.00
Iron bars, Pittsburgh	1.90	1.20	3.25	1.90	5.25	3.25	3.50
Iron bars, Philadelphia ..	2.06	1.12½	3.16	2.06	5.16	3.16	3.69
Steel bars, Pittsburgh	1.80	1.10	3.00	1.85	4.50	2.90	2.90
Tank plates, Pittsburgh ...	1.60	1.10	3.60	1.85	9.00	3.25	3.25
Structural shapes, Pitts. .	1.80	1.10	3.10	1.85	4.50	3.00	3.00
Grooved steel skelp, Pitts..	1.75	1.12½	2.85	1.75	6.00	2.85	2.90
Black sheets, Pittsburgh ..	2.60	1.70	4.50	2.60	9.00	4.50	5.00
Galv. sheets, Pittsburgh ..	5.00	2.65	6.50	4.15	11.00	6.25	6.25
Tin plate, Pittsburgh	3.60	3.10	7.50	3.75	8.50	7.00	7.75
Wire nails, Pittsburgh	2.10	1.50	3.00	2.10	4.00	3.00	3.50
Steel pipe, Pittsburgh	79%	81%	64%	78%	42%	64%	51%
Connellsville Coke at ovens.							
Prompt furnace	3.50	1.50	12.00	2.50	16.00	6.00	6.00
Prompt foundry	3.75	2.00	12.00	3.25	16.00	6.00	7.00
Metals—New York.							
Straits tin	57.00	32.00	56.00	37.50	81.00	42.50	81.00
Lake copper	23.00	13.00	36.00	23.00	37.00	*23.50	*23.50
Electrolytic copper	23.00	12.80	36.00	23.00	37.00	*23.50	*23.50
Casting copper	22.00	12.70	34.00	22.00	34.00	*23.50	23.50
Sheet copper	27.25	18.75	42.00	28.00	44.00	33.00	34.00
Lead (Trust price)	7.00	3.70	7.50	5.50	11.00	5.50	6.25
Spelter	27.25	5.70	26.17½	8.37½	11.50	7.67½	7.92½
Chinese and Jap. antimony	40.00	13.00	45.00	10.50	36.00	13.62½	14.25
Aluminum, 98-99%	60.00	18.75	67.00	53.00	64.00	35.00	37.00
Silver	56½	46¼	77½	55½	108½	79	84½
St. Louis.							
Lead	7.50	3.50	8.25	5.45	12.00	5.42½	6.31½
Spelter	27.00	5.55	24.00	8.20	10.87½	7.50	7.75
Sheet zinc (f.o.b. smelter)	33.00	9.00	25.50	15.00	21.00	19.00	19.00
London.							
Standard tin, prompts	£ 190	£ 148¼	£ 205	£ 161½	£ 291	£ 180½	£ 291
Standard copper, prompts	86¾	57½	153	84	146	110	110
Lead	30¼	18¼	36½	27¼	30½	30½	30½
Spelter	110	28½	110	44	55	45½	54
Silver	27½d	22½d	37d	26½d	55d	35½d	42½d

* Government price.

Comparison of Security Prices.

	Range for 1915		Range for 1916		Range for 1917		Closing, Nov. 30,
	High.	Low.	High.	Low.	High.	Low.	1917.
Iron and Industrial Stocks.							
Allis-Chalmers Mfg.	49½	7¾	38	19	32½	15½	18½
Allis-Chalmers Mfg. pfd.	85½	33	92	70½	85½	69½	72
American Can	68½	25	68½	44	53	29½	35½
American Can pfd.	113½	89	115½	107½	111½	92½	96
American Car & Fdy.	98	40	78½	52	80¾	57	65½
American Locomotive	73¾	19	98	58	82½	47½	53½
American Smelt'g & Refining	108½	56	123¾	88½	112¾	69½	75½
American Steel Foundries ..	74½	24½	73	44	55	51	55½
American Zinc, Lead & Smelt'g	71	67¾	97½	29¾	41½	11½	13½
Anaconda Copper	91½	49½	103½	77	87	51½	56½
Baldwin Locomotive	154½	26½	118½	52	76½	43	55½
Bethlehem Steel	600	46¼	700	115	515	70½	81
Bethlehem Steel pfd.	184	91	168	126	135	84	98½
Chino Copper	57¾	32¾	74	46½	63½	35½	41½
Colo. Fuel & Iron Co.	66½	21¾	63¾	38½	58	29¾	35
Crucible Steel	109½	18½	99½	50½	91½	49½	54
Crucible Steel pfd.	112½	84	124½	108½	117¾	85	86
Driggs-Seabury .....	...	...	119½	45½	87½	39½	72
General Electric	185½	138	187½	159	171¾	122¾	129½
Granby Consolidated	91	79¾	120	80	92¾	65	68
Great Northern Ore Prop. ..	54	25½	50¾	32	38½	22½	26½
Gulf States Steel .....	...	...	193	71	137	77	87
International Harv. of N. J.	114	90	126½	108½	123	100¾	108½
Inter. Harv. of N. J. pfd. ...	85	55	122	114	121	110	110
International Harv. Corp. ...	114	90½	90¾	68½	88	50¾	53
Inter. Harv. Corp. pfd.	120	100	114½	104½	114	97½	97½
Lackawanna Steel	94¾	28	107	64	103½	68	80½
National Enam. & Stamp....	36½	9½	36½	19¾	46¾	24	37
National Enam. & Stamp. pfd.	97	79	100½	90½	101	90½	92
National Lead	70¾	44	74½	57	63½	38½	43½
National Lead, pfd.	115	104¾	117½	111½	114	100	100
New York Air Brake	164¾	56½	186	118	156	98	109
Pressed Steel Car	78¾	25	88¾	42½	83¾	49¾	56¾
Pressel Steel Car, pfd.	106	86	108	8½	106	90	94
Railway Steel Spring	54	19	61¾	32	58	36¾	40½
Railway Steel Spring pfd. ..	102	86½	103¾	95½	101	94	96½
Ray Consolidated Copper	27½	15¾	37	20	32¾	19½	22¾
Republic Iron & Steel	57¾	19	93	42	94½	60	76½
Republic Iron & Steel, pfd...	112½	72	117	101	105½	94	95½
Sloss-Sheffield	66½	22	93½	37	74½	33½	38½
Sloss-Sheffield, pfd.	102	85	103½	91½	99	88¾	88½
Texas Company	237	120	241½	177½	243	132	141½
U. S. Cast Iron Pipe	31¾	8	28½	16¾	24½	10	12½
U. S. Cast Iron Pipe pfd.	55½	32½	67½	48½	62¾	46¾	46¾
U. S. Smelting & Refining ..	...	...	81½	57	67¾	42	45½
U. S. Smelting & Refining pfd. ...	...	...	53½	50	52¾	43¾	46
U. S. Steel Corporation	89½	38	129¾	79¾	136½	88¾	91½
U. S. Steel Corporation, pfd.	117	102	122	115	121½	107½	108½
Utah. Copper	81¾	48½	130	73½	118½	71½	76
Virginia Iron, Coal & Coke..	74	36	72¾	41	77	46	52½
Westinghouse Elec. & Mfg. ..	74¾	32	71½	51½	56	36	38½

Composite Steel.

Computation for December 1, 1917.

Pounds.	Group.	Price.	Extension.
2½	Bars	2.90	7.250
1½	Plates	3.25	4.875
1½	Shapes	3.00	4.500
1½	Pipe (¾-3)	4.80	7.200
1½	Wire nails	3.50	5.250
1	Sheets (28 lb.)	5.00	5.000
½	Tin plates	7.75	3.875
10 pounds			37.950
One pound			3.795

Averaged from daily quotations:

	1913.	1914.	1915.	1916.	1917.
Jan.	1.7737	1.5394	1.4554	2.1410	3.5525
Feb.	1.7625	1.5794	1.4716	2.2988	3.6529
Mar.	1.7646	1.5638	1.5098	2.5579	3.9454
April	1.7742	1.5337	1.5357	2.7165	4.1965
May	1.7786	1.5078	1.5381	2.8043	4.5272
June	1.7719	1.4750	1.5312	2.8300	5.1587
July	1.7600	1.4805	1.5692	2.8425	5.7975
Aug.	7.7400	1.5241	1.6059	2.8588	5.7161
Sept.	1.7093	1.5632	1.6506	2.9013	5.1865
Oct.	1.6779	1.5236	1.7264	2.9747	4.1449
Nov.	1.6203	1.4769	1.9089	3.2036	3.8198
Dec.	1.5556	1.4324	2.0329	3.4679	
Year	1.7241	1.5182	1.6280	2.8009	

Scrap Iron and Steel Prices.

Melting Steel. Bundled No. 1 R. R. No. 1 No. 1 Heavy
 Steel. Sheet Wrought Cast. Steel. Mel't'g.
 Pitts. Pitts. Pitts. Pitts. Pitts. Phila. Ch'go.

Averaged from daily quotations:

1916—						
Apr.	18.00	14.75	19.25	16.00	18.00	16.75
May	17.00	13.65	19.65	16.10	17.00	15.90
June	16.25	13.00	19.00	15.40	15.45	14.80
July	16.70	12.50	18.80	15.30	15.00	14.30
Aug.	16.25	11.70	18.15	15.00	15.00	15.30
Sep.	16.61	11.65	18.35	15.00	15.00	16.00
Oct.	18.25	11.65	19.30	15.80	15.65	17.35
Nov.	22.50	13.75	21.25	17.75	18.25	21.00
Dec.	25.50	16.00	27.20	21.40	23.95	23.65
Year	18.37	13.38	19.73	16.16	16.92	16.90
1917—						
Jan.	23.50	16.25	23.75	20.75	22.75	23.50
Feb.	22.50	15.75	22.50	19.75	21.15	22.25
Mar.	24.00	16.25	26.00	22.00	23.00	24.30
Apr.	27.75	17.25	30.50	24.00	25.50	27.30
May	29.25	19.25	33.00	25.25	26.50	29.00
June	40.75	24.00	40.50	32.25	34.50	38.50
July	38.75	25.35	44.00	33.50	36.00	35.50
Aug.	34.00	24.15	36.00	30.50	31.50	32.10
Sept.	34.00	23.25	32.00	31.00	32.00	32.00
Oct.	29.35	21.00	32.00	27.00	27.00	27.50
Nov.	29.00	21.50	33.25	26.75	26.75	28.50

Composite Pig Iron.

Computation for December 1, 1917.

One ton Bessemer, valley	\$36.30
Two tons basic, valley (33.00)	66.00
One ton No. 2 foundry, valley	33.00
One ton No. 2 foundry, Philadelphia	33.75
One ton No. 2 foundry, Buffalo	33.25
One ton No. 2 foundry, Cleveland	33.30
One ton No. 2 foundry, Chicago	33.50
Two tons No. 2 Southern foundry, Cincinnati (35.90)	71.80
Total, ten tons	340.90
One ton	34.09

Averaged from daily quotations:

	1913.	1914.	1915.	1916.	1917.
Jan.	17.391	13.492	13.070	18.690	30.752
Feb.	17.140	13.721	13.079	18.564	30.946
Mar.	16.775	13.843	12.971	18.857	34.363
April	16.363	13.850	12.914	19.021	39.140
May	15.682	13.808	13.206	18.965	42.037
June	14.968	13.606	13.047	18.552	48.160
July	14.578	13.520	13.125	18.585	52.556
Aug.	14.565	13.516	14.082	18.514	51.927
Sept.	14.692	13.503	14.895	18.697	47.278
Oct.	14.737	13.267	15.213	20.192	34.090
Nov.	14.282	13.047	16.398	25.243	34.090
Dec.	13.838	13.073	17.987	30.082	
Year	15.418	13.520	14.150	20.306	

Unfinished Steel and Iron Bars.

(Averaged from daily quotations.)

	Billets. Pitts.	Sheet Bars. Pitts.	Rods. Pitts.	—Iron bars, deliv.— Phila. Pitts. Ch'go.		
1916—						
Apr.	45.00	45.00	60.00	2.62	2.50	2.35
May	43.00	43.00	59.00	2.66	2.60	2.35
June	42.00†	42.00†	58.00	2.66	2.60	2.35
July	42.50†	42.50†	58.00	2.66	2.60	2.35
Aug.	46.00	46.00	58.00	2.66	2.60	2.35
Sep.	47.00	45.00	58.00	2.66	2.70	2.35
Oct.	48.00	48.00	59.00	2.66	2.75	2.35
Nov.	52.75	54.00	65.00	2.66	2.85	2.50
Dec.	56.96	56.96	70.00	3.02	3.19	2.89
Year	44.23	44.17	57.58	2.57	2.59	2.31
1917—						
Jan.	63.50	63.50	75.00	3.16	3.25	3.00
Feb.	65.00	65.00	77.00	3.16	3.25	3.00
Mar.	68.00	68.00	79.00	3.41	3.46	3.00
Apr.	75.00	75.00	85.00	3.41	3.62	3.25
May	88.00	94.00	93.00	4.16	3.90	3.40
June	95.00	105.00	95.00	4.75	4.51	4.15
July	95.00	105.00	95.00	4.80	5.03	4.50
Aug.	84.00	94.00	92.00	4.92	5.00	4.50
Sep.	70.00	80.00	90.00	4.94	4.75	4.50
Oct.	55.25	59.00	67.75	4.46	4.75	4.50
Nov.	47.50	51.00	57.00	3.90	4.10	4.00

† Premium for open-hearth.

Iron and Steel Imports and Exports.

Value of Tonnage and Non-Tonnage.

	1912.	1913.	1914.	1915.	1916.	1917.
January	\$18,451,914	\$25,141,409	\$16,706,836	\$18,053,421	\$51,643,807	\$108,423,640
February	21,801,570	24,089,871	16,520,260	16,470,751	54,145,496	85,117,010
March	24,474,799	27,221,210	20,551,137	20,985,505	58,266,144	111,164,876
April	26,789,853	27,123,044	20,639,569	25,302,649	58,655,447	102,560,345
May	28,050,247	26,718,970	19,734,045	26,536,612	72,926,180	107,362,635
June	24,795,802	25,228,346	18,927,958	31,730,132	76,257,844	119,141,826
July	24,917,952	24,170,704	16,737,552	35,892,106	71,067,232	77,782,294
August	25,450,107	23,947,440	10,428,817	31,726,657	85,736,585	90,351,388
September ...	23,286,040	22,831,082	12,531,102	38,522,175	90,895,592	
October	25,271,559	25,193,887	16,455,832	43,299,457	82,010,972	
November	26,406,425	20,142,141	15,689,401	48,056,220	77,570,840	
December	23,750,864	22,115,701	14,939,613	45,825,147	88,536,958	
Totals	\$289,128,420	\$293,934,160	\$199,861,684	\$388,400,831	\$861,323,044	\$803,766,580

Exports of Tonnage Lines,---Gross Tons.

	1910.	1911.	1912.	1913.	1914.	1915.	1916.	1917.
January	118,681	152,362	151,575	249,493	118,770	140,550	357,122	608,286
February	110,224	150,919	204,969	241,888	121,206	139,946	368,981	449,107
March	124,980	216,360	218,219	257,519	159,998	174,104	438,656	606,563
April	117,921	228,149	267,313	259,689	161,952	223,587	384,796	521,179
May	135,306	178,589	307,656	242,353	139,107	263,113	538,651	588,515
June	120,601	174,247	273,188	243,108	144,539	356,451	528,022	631,606
July	127,578	162,855	272,778	237,159	114,790	380,336	503,685	349,649
August	131,391	177,902	282,645	209,856	86,599	405,952	597,750	522,810
September	119,155	181,150	248,613	213,057	96,476	382,118	643,767	489,415
October	129,828	186,457	251,411	220,550	147,293	349,848	610,125	
November	155,138	187,554	233,342	175,961	140,731	362,766	554,859	
December	150,102	190,854	235,959	181,715	117,827	353,856	580,961	
Totals	1,540,895	2,187,724	2,947,596	2,745,535	1,549,554	3,532,606	6,110,790	4,765,060

Iron Ore Imports.

	1914.	1915.	1916.	1917.
Jan. ..	101,804	75,286	89,844	97,440
Feb. .	112,574	78,773	94,315	86,314
Mar. .	68,549	88,402	93,383	95,989
April .	111,812	91,561	75,712	58,878
May .	125,659	98,974	148,599	66,762
June .	188,647	118,575	134,154	54,846
July .	141,838	119,468	156,755	80,729
Aug. .	134,913	119,468	127,094	63,571
Sept. .	109,176	173,253	109,747	
Oct. .	114,341	138,318	95,833	
Nov. .	90,222	113,544	82,257	
Dec. .	51,053	118,321	118,043	
Totals	1,350,588	1,341,281	1,325,736	613,529

Iron and Steel Imports.

	1913.	1914.	1915.	1916.	1917.
Jan. .	21,740	17,776	10,568	15,824	39,991
Feb. .	25,505	14,757	7,506	20,279	24,380
Mar. .	27,467	27,829	8,025	15,159	37,280
April .	25,742	30,585	16,565	20,175	48,055
May .	28,728	28,173	28,916	32,113	26,037
June .	36,597	23,076	32,200	26,885	28,413
July .	36,694	25,282	20,858	14,774	28,859
Aug. .	18,740	28,768	27,557	32,257	26,121
Sept. .	19,341	38,420	23,344	25,558	20,804
Oct. .	20,840	22,754	34,319	30,170	
Nov. .	25,809	24,165	36,931	42,544	
Dec. .	26,454	9,493	35,409	44,133	
Total	317,260	289,778	282,443	275,713	279,040

Price Changes of Iron and Steel Products From July 7, 1916 to Date.

Price changes in merchant bars, structural shapes, plates, wire nails, merchant pipe, sheets and tin plates are given below, with dates. These are the commodities used in compiling our composite finished steel. In some cases the dates named are those upon which prominent producers announced price changes, but more frequently the rates are merely those upon which our quotations were changed. A few other price changes are included.

1916—				Nov. 25			
July 7	Blue ann. sheets	3.00	to 2.90	" 27	Blue ann. sheets	3.40	to 3.50
" 7	Galv. sheets	4.75	to 4.50	" 27	Galv. sheets	5.50	to 5.75
Aug. 1	Tin plate	6.00	to 5.50	" 27	Wire nails	2.85	to 3.00
" 7	Wire nails	2.50	to 2.60	Dec. 4	Pipe	68% to	66%
" 15	Bars	2.50	to 2.60	" 4	Sheets	4.00	to 4.25
" 18	Shapes	2.50	to 2.60	Dec. 5	Galv. sheets	5.75	to 6.00
" 18	Plates	2.90	to 3.00	" 5	Blue ann. sheets	3.50	to 3.65
" 25	Galv. sheets	4.25	to 4.15	" 11	Sheets	4.25	to 4.50
Sept. 7	Pipe	70% to	69%	" 11	Galv. sheets	6.00	to 6.25
" 7	Boiler tubes	56% to	54%	" 20	Tin plate	7.00	to 7.50
" 20	Galv. sheets	4.15	to 4.25	" 21	Bars	2.90	to 3.00
" 28	Sheets	2.90	to 3.00	" 21	Shapes	3.00	to 3.10
Oct. 3	Blue ann. sheets	2.90	to 3.00	" 21	Plates	3.50	to 3.60
" 3	Galv. sheets	4.25	to 4.30	" 26	Blue ann. sheets	3.75	to 4.00
" 6	Sheets	3.00	to 3.10	" 30	Pipe	66% to	64%
" 7	Tin plate	5.50	to 6.00	1917—			
" 13	Sheets	3.10	to 3.25	Jan. 10	Galv. sheets	6.25	to 6.50
" 13	Galv. sheets	4.30	to 4.40	" 10	Blue ann. sheets	4.00	to 4.25
" 13	Tin plate	6.00	to 5.75	" 16	Tin plate	7.00	to 7.50
" 16	Galv. sheets	4.40	to 4.50	" 30	Shapes	3.10	to 3.25
" 19	Wire nails	2.60	to 2.70	" 30	Plates	3.60	to 3.75
" 20	Sheets	3.25	to 3.35	Feb. 6	Tin plate	7.00	to 8.00
" 20	Blue ann. sheets	3.00	to 3.15	" 14	Pipe	64% to	62%
" 24	Plates	3.00	to 3.25	" 15	Sheets	4.50	to 4.75
" 25	Bars	2.60	to 2.70	" 16	Blue ann. sheets	4.25	to 4.50
" 25	Shapes	2.60	to 2.70	Mar. 5	Pipe	62% to	60%
" 25	Grooved skelp	2.35	to 2.50	" 5	Wire nails	3.00	to 3.20
" 26	Sheets	3.35	to 3.40	" 8	Bars	3.00	to 3.25
" 26	Galv. sheets	4.50	to 4.75	" 8	Plates	3.75	to 4.50
" 27	Blue ann. sheets	3.15	to 3.30	" 8	Shapes	3.25	to 3.60
" 30	Tin plate	5.75	to 6.00	" 14	Sheets	4.75	to 5.00
" 31	Shapes	2.70	to 2.80	" 14	Galv. sheets	6.50	to 6.75
Nov. 1	Boiler tubes	54% to	52%	" 20	Blue ann. sheets	4.50	to 4.75
" 6	Wire nails	2.70	to 2.85	" 20	Galv. sheets	6.75	to 7.00
" 8	Sheets	3.40	to 3.65	Apr. 2	Tin plate	8.00	to 7.50
" 15	Tin plate	6.00	to 6.25	" 2	Pipe	60% to	55%
" 15	Grooved skelp	2.50	to 2.60	" 3	Sheets	5.00	to 5.50
" 15	Pipe	69% to	68%	" 3	Blue ann. sheets	4.75	to 5.00
" 18	Galv. sheets	5.00	to 5.50	" 3	Galv. sheets	6.75	to 7.00
" 20	Tin plate	6.25	to 7.00	" 18	Sheets	5.50	to 6.00
" 20	Sheets	3.65	to 4.00	" 18	Blue ann. sheets	5.00	to 5.50
" 21	Bars	2.70	to 2.90	" 18	Galv. sheets	7.00	to 7.50
" 21	Plates	3.25	to 3.50	" 20	Sheets	6.00	to 6.50
" 21	Shapes	2.80	to 3.00	" 20	Blue ann. sheets	5.50	to 6.00
" 21	Blue ann. sheets	3.30	to 3.40	" 20	Galv. sheets	7.50	to 8.00
" 21	Boiler tubes	52% to	46%				

Apr. 23	Wire nails	3.20	to 3.50
" 24	Bars	3.35	to 3.50
" 24	Shapes	3.60	to 4.00
" 25	Tin plate	7.50	to 8.00
May 1	Galv. sheets	8.00	to 9.00
" 3	Pipe	55%	to 49%
" 14	Bars	3.50	to 3.75
" 14	Plates	4.50	to 5.50
" 17	Sheets	6.50	to 7.00
" 17	Blue ann. sheets	6.00	to 6.50
" 18	Galv. sheets	8.00	to 8.50
" 18	Blue ann. sheets	6.50	to 7.00
" 18	Galv. sheets	8.50	to 9.25
June 7	Plates	5.50	to 7.00
" 8	Shapes	4.00	to 4.25
" 8	Galv. sheets	9.25	to 9.50
" 13	Sheets	7.00	to 7.50
" 13	Blue ann. sheets	7.00	to 7.50
" 15	Bars	3.75	to 4.00
" 18	Plates	7.00	to 8.00
" 19	Wire nails	3.50	to 4.00
" 20	Sheets	7.50	to 8.00
" 25	Bars	4.00	to 4.50
" 25	Shapes	4.25	to 4.50
" 25	Galv. sheets	9.50	to 10.00
" 28	Plates	8.00	to 9.00
" 29	Blue ann. sheets	7.50	to 8.00
July 2	Pipe	49%	to 42%
Aug. 8	Pipe	42%	to 49%
" 31	Plates	9.00	to 8.00
Sept. 7	Bars	4.50	to 4.00
" 17	Galv. sheets	10.00	to 9.50
" 17	Shapes	4.50	to 4.00
" 25	Bars	4.00	to 2.90*
" 25	Shapes	4.00	to 3.00*
" 25	Plates	8.00	to 3.25*
Oct. 16	Sheets	8.00	to 7.25
" 16	Blue ann. sheets	8.00	to 7.75
" 16	Galv. sheets	9.50	to 9.00
" 26	Sheets	7.25	to 6.00
" 26	Blue ann. sheets	7.75	to 6.00
" 26	Galv. sheets	9.00	to 7.50
" 29	Sheets	6.00	to 5.50
" 29	Blue ann. sheets	6.00	to 5.50
" 29	Galv. sheets	7.50	to 7.00
Nov. 5	Sheets	5.50	to 5.00
" 5	Blue ann. sheets	5.50	to 5.00*
" 5	Galv. sheets	7.00	to 6.50
" 6	Blue ann. sheets	5.00	to 4.25*
" 6	Galv. sheets	6.50	to 6.25*
" 6	Wire nails	4.00	to 3.50*
" 6	Pipe	49%	to 51%*
" 6	Shafting	10%	to 17%*
" 6	Tin plate	8.00	to 7.75*

Steel Making Pig Iron Averages.

Bessemer and basic pig iron averages compiled by Messrs. W. P. Snyder & Company from sales in the valley market of 1,000 tons and over.

	Bessemer.		Basic.	
	1916.	1917.	1916.	1917.
Jan. ...	\$20.645	\$35.00	\$17.833	\$30.00
Feb. ...	20.2136	35.418	17.984	30.00
Mar. ..	20.8625	36.423	18.25	32.537
April ..	20.70	41.332	18.00	37.996
May ..	20.833	45.9917	18.1607	41.8947
June ..	21.00	53.266	18.00	49.149
July ...	21.00	56.50	18.00	52.848
Aug. ...	21.00	53.221	18.00	49.422
Sept. ...	21.9346	45.4506	18.63	41.344
Oct. ...	23.6576	36.30	20.3086	33.00
Nov. ...	29.12	36.00	27.229	33.00
Dec. ...	34.213		30.00	
Year ..	22.9316		20.0329	

Above prices are f. o. b. valley furnace; delivered Pittsburgh is 95 cents higher.

British Iron And Steel Exports.

	Pig Iron.	Rails.	Tin Plate.	Totals.*
1912 ..	1,262,383	407,175	481,123	4,933,112
1913 ..	1,124,181	500,117	494,497	5,049,090
1914 ..	780,763	433,507	435,392	3,972,348
1915 ..	611,227	242,267	368,778	3,248,046
1916 ..	917,396	50,275	321,710	3,357,829
1917—				
July ...	69,999	3,485	38,174	298,929
Aug. ...	95,655	1,983	34,124	319,928
Sept. ...	72,683	2,712	19,226	231,335
Oct. ...	72,187	6,929	10,929	241,261
Nov. ...	49,986	16,411	4,571	224,554
Dec. ...	48,542	2,317	14,248	158,609
1917—				
Jan. ...	61,201	5,935	16,515	210,124
Feb. ...	59,970	851	11,069	186,308
Mar. ...	79,694	6,084	38,057	239,965
April ...	57,738	2,659	16,863	180,869
May ...	68,201	1,680	18,290	199,418
June ...	86,793	2,453	18,975	220,304
July ...	71,091	4,734	18,941	268,190
Aug. ...	65,383	3,611	14,867	215,061
Sept. ...	68,066	3,173	9,382	177,393
Oct. ...	46,902	2,297	10,000	175,264
10 mos.	668,039	34,784	150,783	2,072,514

* Includes scrap, pig iron, rolled iron and steel, cast and wrought iron manufactures, bolts, nuts, etc., but not finished machinery, boilers, tools, etc.

Immigration Statistics.

Years mentioned refer to fiscal years ended June 30th. Aliens admitted include immigrant and non-immigrant, aliens departed include emigrant and non-emigrant.

Excess Arrivals Over Departures.

	Aliens.	Citizens.	Total.
1913	815,303	*61,098	754,205
1914	769,276	*82,211	687,065
1915	50,070	67,167	117,237
1916	125,941	11,197	137,138
1917	216,498	1,409	217,907
October 1915 ..	4,877	662	5,539
November	3,292	*802	2,490
December	*570	*891	*1,461
January, 1916 ..	7,303	*1,212	6,091
February	19,420	*1,826	17,594
March	23,791	4,198	27,989
April	26,143	4,471	30,614
May	24,708	2,021	26,729
June	22,184	65	22,249
July	18,244	3,634	21,878
August	21,413	304	21,717
September	29,310	1,443	30,753
October	28,339	*2,012	26,327
November	24,241	*183	24,058
December	18,791	*252	18,539
January, 1917 ..	19,563	*1,790	17,773
February	14,145	*1,612	13,103
March	14,125	2,591	16,716
April	18,821	4,709	23,530
May	5,313	*7,525	*2,212
June	3,593	2,182	5,725
July	2,832	*4,164	*1,332
August	2,205	*13,251	*11,046
September	1,715	*19,096	*17,381

September, 1917.

Immigrant aliens in	9,228
Non-immigrants in	5,130
Total aliens in	14,358

Emigrant aliens out	1,327
Non-emigrant aliens out	5,416
Total aliens out	12,643

Citizens in	5,744
Citizens out	21,849
Excess citizens out	19,096

Change in population.

Aliens	1,715
Citizens	-49,096
Net change	-17,381

* Excess of departures.

Our Foreign Trade.

Value of merchandise imports and exports and favorable trade balance, calendar years.

	Imports.	Exports.	Balance.
1906	1,320,501,572	1,798,243,434	477,741,862
1907	1,423,169,820	1,923,426,205	500,256,385
1908	1,116,374,087	1,752,835,447	636,461,360
1909	1,475,520,724	1,728,198,645	252,677,921
1910	1,562,504,151	1,866,258,904	303,354,753
1911	1,532,359,160	2,092,526,746	560,167,586
1912	1,818,133,355	2,399,217,993	581,084,638
1913	1,792,596,480	2,848,018,292	691,421,812
1914	1,789,276,001	2,113,624,050	324,348,049
1915	1,778,596,695	3,554,670,847	1,776,074,152
1916	*2,391,654,335	*5,481,423,589	*3,089,769,254

1914—

Oct.	137,978,778	195,283,852	57,305,074
Nov.	126,467,062	205,878,333	79,411,271
Dec.	114,656,545	245,632,558	130,976,013

1915—

Jan.	122,148,317	267,879,313	145,730,996
Feb.	125,123,391	298,727,757	173,604,366
Mar.	158,022,016	296,501,852	138,479,836
Apr.	160,576,106	294,745,913	134,169,807
May	142,284,851	273,769,093	131,484,242
June	157,695,140	268,547,416	110,852,276
July	143,099,620	267,978,990	124,879,370
Aug.	141,830,202	261,025,230	119,195,028
Sept.	151,236,026	300,676,822	149,440,796
Oct.	149,172,729	336,452,009	186,979,289
Nov.	155,496,675	327,670,353	172,173,678
Dec.	171,832,505	359,306,492	187,473,987

1916—

Jan.	184,350,942	330,036,410	145,685,468
Feb.	193,935,117	402,991,118	209,056,001
Mar.	213,589,785	410,742,034	197,152,249
Apr.	218,236,397	398,568,532	180,332,135
May	229,188,957	474,803,637	245,614,680
June	245,795,438	464,784,318	218,988,880
July	182,722,938	444,713,964	261,991,026
Aug.	199,247,391	509,778,680	310,531,289
Sept.	164,038,614	515,007,408	650,968,794
Oct.	178,658,730	492,813,918	314,155,188
Nov.	176,988,305	516,976,359	339,988,054
Dec.	204,834,188	521,650,904	316,816,716

1917—

Jan.	241,707,282	*613,555,693	*371,848,411
Feb.	199,479,996	467,683,406	268,203,410
Mar.	270,218,139	553,988,239	283,770,100
Apr.	253,916,966	530,252,295	276,335,329
May	280,706,164	552,795,022	272,088,858
June	*306,622,939	575,210,049	268,587,110
July	225,926,352	373,002,887	147,076,535
Aug.	267,854,767	490,009,171	222,154,404
Sept.	236,196,898	456,005,947	219,809,049

* High record.

U. S. Steel Corporation's Operations.

Earnings and Unfilled Orders.

Earnings by Quarters.

Net earnings by quarters since 1911:

Quarter.	1917.	1916.	1915.
1st	\$113,121,018	\$60,713,624	\$12,457,809
2nd	90,579,204	81,126,048	27,950,055
3rd	68,243,784	85,817,067	38,710,644
4th		105,968,347	51,277,504
Year ...		333,625,086	130,396,012

* First quarter report contained no deduction report contained deduction \$53,918,872, also cover first quarter tax, all according to deduction \$63,733,013 also deduction from for first half, both computed according to tion for excess profits tax. Second quarter deduction from surplus of \$33,865,000 to House bill. Third quarter report contained surplus \$12,716,724 to cover additional tax law meanwhile enacted.

	1914.	1913.	1912.
1st	\$17,994,382	\$34,426,802	\$17,826,973
2nd	20,457,596	41,219,813	25,102,266
3rd	22,276,002	38,450,400	30,063,512
4th	10,935,635	23,084,330	35,181,922
Year	71,663,615	137,181,345	108,174,673

Unfilled Orders.

(At end of the Quarter.)

	First.	Second.	Third.	Fourth.
1906 ..	7,018,712	6,809,584	7,936,884	4,489,718
1907 ..	8,043,858	7,603,878	6,425,008	4,642,553
1908 ..	3,765,343	3,313,876	3,421,977	3,603,527
1909 ..	3,542,590	4,057,939	4,796,833	5,927,031
1910 ..	5,402,514	4,237,794	3,158,106	2,674,757
1911 ..	3,447,301	3,361,058	3,611,317	5,084,761
1912 ..	5,304,841	5,807,346	6,551,507	7,932,164
1913 ..	7,468,956	5,807,317	5,003,785	4,282,108
1914 ..	4,653,825	4,032,857	3,787,667	3,836,643
1915 ..	4,255,749	4,678,196	5,317,608	7,805,220
1916 ..	9,331,001	9,640,458	9,522,584	11,547,286
1917 ..	77,711,644	11,383,287	9,833,475	

Bookings and Shipments.

In this table, first two columns, percentages of bookings and shipments to total capacity, our own estimates, while last column is derived from official reports of "unfilled tonnage" while third percentage column is directly computed from this tonnage column.

	Ship- ments. %	Book- ings. %	Dif- ference. %	Dif- ference. Tons.
1915—				
January	83	104	+21	+250,344
August	91	89	-2	-20,085
September ...	98	133	+35	+409,163
October	103	173	+69	+847,834
November	102	186	+84	+1,024,037
December	102	152	+50	+615,721

1916—				
January ...	102	112	+10	+116,547
February ..	102	157	+55	+646,199
March	104	164	+60	+762,035
April	104	146	+42	+498,550
May	104	113	+9	+108,227
June	104	82	-22	-297,340
July	90	86	-4	-46,866
September ..	96	87	-9	-137,773
October ...	106	145	+39	+492,676
November ..	104	189	+85	+1,042,282
December ..	96	136	+40	+485,744

1917—				
January ...	92	86	-9	-73,232
February ..	92	101	+9	+102,643
March	97	107	+10	+134,947
April	99	137	+38	+471,439
May	98	75	-23	-296,492
June	98	59	-39	-506,304
July	92	49	-43	-539,133
August	90	58	-32	-437,115
September ..	90	44	-46	-576,572
October	93	32	-61	-871,802
November ..	90	81	-9	-111,560

Total unfilled obligations, November 30, 1917, 8,897,006 tons.

Lake Superior Iron Ore.

Shipments of iron ore down the lakes have been as follows, in gross tons:

	1913.	1914.	1915.	1916.	1917.
April	866,386	269,686	503,832	1,658,411	211,722
May	7,284,212	3,852,063	5,012,659	8,449,580	6,283,071
June	7,974,444	5,502,367	6,005,091	9,507,576	9,659,993
July	8,204,416	5,784,514	7,204,021	9,750,157	10,241,633
August	7,677,601	5,869,477	8,081,117	9,860,140	10,146,786
September	7,258,413	5,431,307	7,803,146	9,600,786	9,536,546
October	6,526,103	4,242,392	7,146,873	9,116,196	8,196,892
November	3,270,958	1,070,092	1,445,129	5,713,452	7,371,878
December	18,545		57,226	1,081,900	
Season Lake ..	49,070,478	32,021,897	46,318,804	64,734,198	61,587,426

Tin Plate Movement.

United States imports and exports of tin plate in gross tons have been as follows, the imports of course including those for drawback purposes:

	Imports.	Exports.
1906	56,983	12,082
1907	57,773	10,293
1908	58,490	11,878
1909	62,592	9,327
1910	66,640	12,459
1911	14,098	61,466
1912	2,053	81,694
1913	20,680	57,812
1914	15,411	59,549
1915	2,350	154,642
1916	1,008	227,391
January, 1916	62	12,178
February	107	13,534
March	44	20,363
April	179	21,385
May	39	25,585
June	91	29,751
July	150	18,760
August	105	18,757
September	51	18,770
October	111	14,195
November	38	15,816
December	34	18,229
January, 1917	31	23,408
February	35	14,632
March	21	21,680
April	34	19,936
May	2	23,283
June	2	25,461
July	0	16,719
August	0	15,962
September	0	11,596

STRUCTURAL STEEL LETTINGS

Reports of the Bridge Builders' and Structural Society, lettings of structural steel contracts by months in percentage of the fabricating capacity, capacity being now about 180,000 tons a month.

	1914.	1915.	1916.	1917.
January	62	25	69	61½
February	63	30	75	59
March	76	64	102	68
April	88	62½	72½	61
May	57	61	80	56½
June	56½	80	58	47½
July	68	86	47½	41½
August	77	85	64	38
September ..	38½	67	52½	29
October	35	78	77	61½
November ..	20	105	78	
December ..	35	121	86	
Average ..	52¼	72	71¾	

Car and Locomotive Buying.

Freight Cars Ordered.

1915: Domestic	105,000	
Export	20,000	
1916: Domestic	165,000	
Export	29,000	
1917: Domestic	50,561	
Export	69,002	
U. S. Ry. in France	22,772	
January	16,840	
February	19,566	
March	9,687	
April	1,772	
May	12,298	
June	6,055	
Six months		66,218
July	5,670	
August	13,262	
September	605	
October	45,751	
November	10,829	

Locomotives Ordered.

1915: Domestic	1,500	
Export	800	
1916: Domestic	2,850	
Export	2,900	
1917: Domestic	2,148	
Export	1,709	
U. S. Ry. in France	2,014	
January	807	
February	299	
March	232	
April	339	
May	1,276	
June	575	
Six months		3,528
July	448	
August	775	
September	65	
October	957	
November	98	

A DUPLEX STEEL PROCESS.

Arthur Rollason, Nottingham, England, has patented a duplex steel making process for use in connection with the electric furnace. Blast furnace metal passes to a Bessemer converter, preferably side blown, acid lined, being there desiliconized and decarbonized, whereupon it passes to a second converter, basic lined, with both side and bottom blow, the blow being regulated as to bottom or side according to phosphorus content and temperature, the side blow being utilized if the metal is too hot.

Copper in November.

A Perplexing Situation Finally Adjusted — Jobbers Permitted to Resell at 5% Over Cost — Spot Business and Quotations Restored.

The copper market in November passed through the final stages of adjustment to the necessities of war and war conditions which had made government regulation of the industry imperative and which resulted in the price fixing and distribution of the metal which placed under complete control. With the issuance of the bulletin of the Copper Producers' Committee late in the month, giving detailed instruction covering perplexities in the trade which had arisen because of the lack of definite information concerning certain points, the difficulties of the jobbers, dealers and small consumers were set at rest and business was being expedited to meet the requirements of this contingent in the trade, after being practically at a standstill since the agreed upon price fixed in September, which was made between the producers of the country and representatives of the United States Government. The allowance of a 5% advance over the fixed price—23.50c per pound—to cover expenses of handling and to include profit, in the transaction of resale business in less than carload lots was considered fair and satisfactory by those concerned.

It was well known in the trade that some small sales at premiums over the Government price had been going on at intervals to cover mandatory requirements, at anywhere from 26.00c to 28.00c per pound according to the need of the purchaser, and the amount of copper held by the seller among some members of the trade, while others refused to take part in such business because they believed it contrary to the Government's intention in fixing the one-for-all price. Copper for prompt and early delivery was exceedingly scarce and impossible to obtain except in small jobbing lots, the producers having announced that they were out of the market for the remainder of the year. Sales of car lots and larger tonnages for January, February and first quarter shipments, however,

were being consummated with the understanding that such contracts were subject to the Government's requirements. Differentials in prices for Lake, Electrolytic and Casting copper, if there are to be any, have not yet been established this being the only important point not cleared up in the bulletin recently sent out by the Producers' Committee.

Labor Situation Improved—Production Increasing—Imports Continue Heavy.

With the greatly improved labor conditions continuing, production is reported to be increasing satisfactorily and in sufficient volume to meet all requirements for the Government and of the trade. Importations during 1917 have supplemented the domestic supply of copper as never before and continue at the rate of 15,000 to 20,000 tons per month.

Exports of copper in October, not including those to Canada, the figures for which are not yet available, were 39,115 tons making a total for the first ten months of the year, 409,958 tons, equivalent to an average rate of 92,000,000 pounds per month. If this average rate is maintained during the last two months of the year, the previous maximum record established in 1913, will be exceeded by nearly 30%.

From the copper stock investors' standpoint, the outlook for the continuance of substantial dividends has materially dwindled from an annual rate of \$6.00 to \$100 per share—in the case of seven different stocks—to a rate of \$4.00 to \$40.00 per share on the same list. Speculation in copper is practically at an end being quite impossible under present regulations and control.

Less Than Carload Prices.

There has been no wholesale market for copper during the past two months as Government contracts, placed directly or indirectly, have taken nearly all the metal available and estimated in some quarters to be fully 90% of production. Jobbers' prices at the close

Lake Copper Prices.

Monthly average prices of Lake Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.89	14.76	13.89	24.10	29.83
Feb.	15.80½	14.98	14.72½	27.44	34.04½
Mar.	14.96	14.72	15.11	27.42	35.33
Apr.	15.55	14.68	17.43	28.91½	32.46
May	15.73	14.44	18.81	29.28½	31.90
June	15.08	14.15	19.92	27.44	31.35
July	14.77	13.73	19.42	25.81	29.79
Aug.	15.79	12.68	17.47	26.58	28.75
Sept.	16.72	12.43½	17.76	27.86	*27.43
Oct.	16.81	11.66	17.92½	28.37½	†23.50
Nov.	15.90	11.93	18.86	31.71	†21.50
Dec.	14.82	13.16	20.37½	33.07½	
Av.	15.70	13.61	17.64	28.17	

Electrolytic Copper Prices.

Monthly average prices of Electrolytic Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.75½	14.45	13.71	24.10	30.26
Feb.	15.27	14.67	14.57	27.46	35.22
Mar.	14.92½	14.33½	14.96	27.44	35.74
Apr.	15.48	14.34	17.09	29.31	32.19
May	15.63	14.13	18.60	29.81	32.32
June	14.85	13.81	19.71	27.49½	32.57
July	14.57	13.49	19.08	25.60	28.90
Aug.	15.68	12.41½	17.22	27.36½	27.13
Sept.	16.55	12.08½	17.70½	28.26	*26.35½
Oct.	16.54	11.40	17.86	28.64	†23.50
Nov.	15.47	11.74	18.83	33.22½	†23.50
Dec.	14.47	12.93	20.35	33.84	
Av.	15.52	13.31½	17.47	28.46	

Casting Copper Prices.

Monthly average prices of Casting Copper in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	16.57	14.27½	13.52	23.06½	28.04½
Feb.	15.14	14.48	14.17	26.03	31.73½
Mar.	14.76	14.18	14.34	25.90	32.18
Apr.	15.39	14.18	16.48	27.16	29.24
May	15.45½	14.00	17.41	27.37	30.11
June	14.72	13.65	18.74½	25.10	30.36
July	14.40½	13.34½	17.76½	23.61	27.59
Aug.	15.50	12.27	16.46	24.67	26.58
Sept.	16.57	12.00	16.75	25.93	*26.23
Oct.	16.33	11.29	17.32	27.17	†23.50
Nov.	15.19	11.63	18.31	30.37½	†23.50
Dec.	14.22	12.83½	19.73	31.74	
Av.	15.33	13.18	16.76	26.51	

* Average of quotations to Sept. 20th inclusive; no market thereafter; † Government price.

Sheet Copper Price Changes.

The changes in the base price of sheet copper since April 26, 1916 are given below, with price of Lake Copper on same date.

	1916—	Sheet Copper.	Lake Copper.
April 26	36.50		29.75
May 9	37.50		30.00
August 1	35.50		25.50
August 19	36.00		27.00
September 27	37.00		28.25
November 14	40.00		31.75
November 20	41.00		33.75
December 5	42.00		34.00
1917—			
February 19	44.00		35.25
April 10	42.00		33.75
April 23	40.00		30.75
June 11	38.00		31.50
June 19	39.00		31.50
June 20	38.00		28.50
July 26	36.00		29.00
September 7	35.00		27.50

Waterbury Copper Averages.

	1913.	1914.	1915.	1916.	1917.
Jan.	17.00	14.75	14.12½	24.75	32.25
Feb.	15.50	15.12½	15.25	27.75	35.25
Mar.	15.12½	15.00	15.75	28.00	35.50
Apr.	15.75	14.87½	18.50	29.00	32.75
May	15.87½	14.75	22.50	29.87½	32.00
June	15.37½	14.37½	22.50	28.25	32.50
July	14.75	14.12½	22.25	27.25	30.87½
Aug.	15.62½	13.00	19.50	27.00	29.00
Sept.	16.87½	12.87½	18.50	28.00	27.25
Oct.	16.87½	12.25	18.25	28.87½	27.00
Nov.	16.25	12.25	19.37½	33.25	23.50
Dec.	15.00	13.50	20.75	34.25	

Av. . 15.83 13.91 18.94 28.85½

Exports of Copper From the United States.

(In tons of 2,240 lbs.)

	1914.	1915.	1916.	1917.
January ..	36,018	26,193	23,663	*51,322
February ..	31,634	15,583	20,648	*32,265
March	46,504	30,148	26,321	*51,218
April	35,079	18,738	21,654	*49,536
May	32,077	28,889	16,062	*49,245
June	35,182	16,976	39,595	*41,177
July	34,145	17,708	35,066	*24,363
August	16,509	17,551	32,190	*42,735
September ..	19,402	14,877	29,803	28,982
October ..	23,514	24,087	33,224	39,115
November ..	24,999	23,168	22,598	
December ..	22,166	42,426	26,486	
Totals ..	360,229	276,344	327,310	409,958

* Exports to Canada included.

of the month—there were no quotations until after the Producers' Committee issued its bulletin on November 23rd—for prompt, were prime Lake 25.75 to 26.00c; for electrolytic, 24.67½ to 25.50c; casting, 25.00 to 25.50c. For December delivery, prime Lake, 25.75 to 26.00c; electrolytic, 24.67½ to 25.00c; casting, 25.00 to 25.50c. For first quarter delivery prime Lake, electrolytic and casting, jobbers' prices, were all alike at 24.67½c per pound, for the three varieties, this being 5% advance over the Government's price of 23.50c. By that time, jobbers will have disposed of copper purchased at higher rates than the fixed price, and be able to buy from the large producers. A fair amount of business in these less than carload lots for prompt and early delivery was consummated during the last week, but the amount of copper available for such sale was not large.

At the same time, producers were booking orders for January in such volume, as to indicate that they might soon be sold up for that month. Orders for February and March delivery were being made in satisfactory volume, also.

The foreign market was stationary in prices during the month at £110 for spot and future Standard; £125 for spot American electrolytic, and £121 for future American electrolytic.

Copper Prices in November^{*}

	— New York —			London.	
	Lake.	Electro.	Casting.	Standard.	
	Cents.	Cents.	Cents.	£	s d
High	*23.50	*23.50	*23.50	110	0 0
Low	*23.50	*23.50	*23.50	110	0 0
Aver.	*23.50	*23.50	*23.50	110	0 0

* Government price.

Tin in November.

AN EXTRAORDINARY SITUATION

Tin Price Advanced to Highest Level in History; 81.00c at the Close — Due to Shortage Created by Intolerable British Shipping Regulations — U. S. War Trade Board Takes Complete Control — Navy Department Commandeers 25 Tons — Net Advance Here 15c Per Pound; Abroad £31 to £34 Per Ton.

A most extraordinary situation developed in the tin market during November, marked by the highest prices for all varieties of tin that have ever been recorded in the history of the industry. These prices were due, primarily to the shortage of tin, both real and only apparent, in New York. As a matter of fact, there were over 1,600 tons in store and on dock at New York November 1st which were unavailable because of the unfortunate British Shipping Regulations, which the Tin Committee appointed in this country last June, have ever since that time, been working hard, to have changed. Trouble due to this cause had been brewing for a long time and in the past month finally resulted in the blocking of all trading in Straits tin, for the time being, the only available tin being in small jobbing lots of other varieties which were actually scarce.

Complications existing in the relations between Holland and this country had caused shipments of Banca tin from Batavia to be recalled and the scarcity of this variety, upon which the trade had been largely depending for some time, was genuine. The supplies of Chinese No. 1 and of English Lamb & Flagg 99% tin, were diminished rapidly until the former was unobtainable and only small amounts of the latter could be had. On November 13, the United States Navy Department requisitioned 25 tons of tin, for its immediate requirements, from an incoming steamer whose tin cargo had been previously all sold to consumers.

Just when discouragement over conditions was deepest, the long expected announcement of the Sub-Committee on Tin, of the Iron and Steel Institute, that United States War Trade Board would take over complete control of

pig tin, working through the Iron and Steel Institute, was made and immediate action was taken to do so. Only a few days later the Navy Department commandeered every pound of tin held in bonded warehouses.

Sensational Advance in Prices.

Prices advanced sensationally from 66c on Nov. 1st—which was also the closing October figure and itself a new maximum, the previous highest—65c per pound, having been established in 1914—to the unthought of price of 81c on the last day of November, this being both a total and a net rise of 15c per pound during the month. Trading, however, had come to a standstill during the last week, and prices were nominal.

In the foreign market the net advance, on each of the various kinds and positions of tin, was unusually large. Spot Standard registered a total and net rise of £34 from £257 on the first day to £291 on the last day of November, the lowest point being on November 1st. Future Standard registered a total and net rise of £32 from £257 10s at the beginning of the month to £289 10s at the close. Straits tin in London advanced from the lowest point, £258 on November 1st, to the highest point £291 on November 30th, a total and net rise of £33 for the month. Straits tin, c.i.f. London, from the Far East, registered a net advance of £29 from £260 on November 1st to £289 at the close, but the total advance was £31, from £258, the lowest point on November 2nd, to the highest, £289, on the last day. In the absence of official British statistics which are no longer published, stocks in the Far East, at the Straits Settlements, Penang and Singapore, were estimated at the beginning of November to be 11,000 tons, a large supply. Straits shipments during October were estimated 5,000 tons and the visible supply at the end of that month was 18,027 tons.

United States Output a Surprise.

The statistical position of tin was of more than usual interest to the trade, during November, because of shortage of spot metal in New York, and difficulty encountered in obtaining even small amounts. The amount of secondary or recovered metal—17,400 tons—

as given in the United States Geological Survey report covering 1916 was in the nature of a surprise to the trade, as it exceeded by 3,350 tons, the amount recovered during the preceding year. Its estimated value was \$15,131,040 and the tonnage was equal to about 24 per cent. of total importations of primary tin during the same period, which is an indication of the importance of this kind of metal in the industry. On November 1st, the New York Metal Exchange statistics gave deliveries at Atlantic ports in October, 2,800 tons with stocks in store and on dock, 1,657 tons. Pacific arrivals in October were 1,869 tons and Atlantic arrivals 2,060 tons, a total of 3,929 tons at both seaboard. Consumption of tin in the United States exceeds that of all other countries combined, although this country does not itself produce tin from native ore. The production of tin in this country from Bolivian ores is steadily increasing, and shipments of ore in the first nine months of this year show an increase of 3,400 tons against 1916 shipments and the United States output is

Tin Prices in November.

Day.	New York.	London.		
	Cents.	£	s	d
1	66.00	257	15	0
2	66.25	258	0	0
5	68.00	260	0	0
6 .....	.....	262	15	0
7	70.00	266	0	0
8	70.00	263	15	0
9	71.00	267	5	0
12	71.00	269	0	0
13	73.50	273	15	0
14	74.00	278	0	0
15	73.25	277	0	0
16	74.00	276	10	0
19	75.00	276	5	0
20	77.00	279	10	0
21	78.50	284	15	0
22	80.00	282	10	0
23	80.00	282	15	0
26	80.00	283	0	0
27	80.00	284	0	0
28	80.00	286	0	0
30	81.00	291	0	0
High	81.00	291	0	0
Low	66.00	257	15	0
Average	74.42 ¹ / ₂	274	7	2

expected to increase to 800 tons a month in the near future. The last report of the American Smelting & Refining Company was at the rate of 650 tons per month from their Perth Amboy smelting plant. Arrivals at Atlantic ports in November were 1,400 tons with 4,100 tons reported afloat. Pacific arrivals were 1,178 tons and stocks in warehouse and landing at New York were 1,592 tons.

Tin Trade Indignant.

The indignation that existed in tin circles at the close of October over the intolerable conditions that had developed within the trade, because of the unfairness made possible, by British Shipping Regulations, and which were indirectly if not directly responsible for the acute shortage of spot metal in New York, continued to agitate the trade and to restrict business in tin during November. Early in the month it was known that spot Straits metal was practically unobtainable, but moderate sales of future shipments were made, prices for the various deliveries ranging from 59.75 to 60.00c per pound, while spot Banca was held at 66.00c Chinese No. 1 and English 99% selling around 64.00c. By the ninth, spot Straits was nominally 70.00c; there was no Banca offered and Chinese and English 99% tin was selling in small quantities at 66.50c per pound. Straits tin due to arrive in December was 67.00c;

due in January, 64.50c.

By the close of the first fortnight, the situation was even worse, Banca and Chinese tin was out of the market as was Straits; English 99% was sold at 69.00c while future shipments of Straits, due in December were held at 69.00c. Spot Straits tin was held nominally at 74.00c. In the following week there was no improvement in Straits metal, but some Chinese metal had arrived, and prices on this variety and on English 99% receded to 66.50c per pound and there was a jobber's sale of a very small lot at 77.00c.

By the 22nd, when the announcement of Government control of pig tin was made, spot Straits had advanced nominally to 80.00c; Chinese was again scarce and had advanced to 67.50c to 68.00c; English 99% was in fair supply at 66.50c. These two varieties were the mainstay of the market and came overland to New York. In the closing week the situation was still very serious but with all details being worked out for the control of importations, sales and distribution of the metal, the trade realized that relief was at hand and only a question of time. Closing prices were 81.00c for spot Straits as well as for small lots of Banca tin which had cropped out from somewhere; Chinese No. 1 was very scarce at 71.00c this being also the price of English Lamb & Flagg 99% tin in wholesale lots.

Visible Supplies.

Visible supplies of tin at end of each month:

	1913.	1914.	1915.	1916.	1917.
Jan.	13,971	16,244	13,901	17,041	18,169
Feb.	14,004	17,008	14,548	16,511	19,027
Mar.	14,102	16,989	15,467	18,782	20,307
April	9,822	15,447	15,785	19,739	18,047
May	13,710	17,862	14,646	19,614	19,404
June	11,101	16,027	15,927	19,363	18,059
July	12,063	14,167	16,084	18,404	17,544
Aug.	11,261	14,452	15,127	18,042	20,353
Sept.	12,943	14,613	15,191	16,192	19,153
Oct.	11,857	10,894	13,154	17,415	18,027
Nov.	14,470	11,483	16,451	21,186	
Dec.	13,893	13,906	16,216	20,737	
Av'ge	12,377	14,907	15,208	18,585	

Shipments From the Straits.

Monthly shipments of tin from the Straits Settlements to Europe and United States:

	1913.	1914.	1915.	1916.	1917.
Jan.	6,050	5,290	5,200	6,095	4,815
Feb.	4,660	6,520	5,584	6,250	6,255
Mar.	4,810	4,120	4,970	5,170	5,134
April	4,400	4,930	5,270	4,685	4,393
May	6,160	6,900	6,759	3,965	6,866
June	4,280	5,870	6,665	6,210	4,723
July	4,770	4,975	5,606	5,410	4,410
Aug.	6,030	3,315	4,712	4,526	5,770
Sept.	5,160	4,973	5,296	3,270	*5,000
Oct.	5,020	4,610	4,441	5,868	*5,000
Nov.	5,560	5,155	6,713	5,380	
Dec.	5,110	6,435	5,301	4,758	
Total	62,550	63,093	66,517	61,587	
Av'ge.	5,213	5,258	5,543	5,132	

* Estimated.

Consumption In the U. S.

Monthly deliveries of tin in the United States exclusive of Pacific Coast:

	1913.	1914.	1915.	1916.*	1917.*
Jan.	3,700	3,600	2,300	4,452	7,177
Feb.	3,500	3,300	3,375	6,388	3,930
Mar.	3,900	4,150	3,200	4,726	4,800
April	3,450	4,300	3,200	4,202	4,380
May	3,350	3,800	5,600	5,455	5,749
June	3,800	3,650	3,900	6,398	6,398
July	3,900	3,900	5,000	4,432	4,806
Aug.	3,600	2,900	4,500	4,335	3,305
Sept.	3,100	3,600	4,300	4,025	5,402
Oct.	3,700	3,700	4,900	4,556	4,669
Nov.	2,800	2,600	2,975	3,165	
Dec.	3,100	1,900	5,200	4,082	
Total	43,900	41,700	48,750	56,216	
Av'ge.	3,658	3,475	4,062	4,685	

Tin Statistics.

Compiled by New York Metal Exchange.
(Tons of 2,240 lbs.)

Straits

Shipments during	Nov. 1917.	Oct. 1917.	Nov. 1916.
To Gt. Britain .	*2,300	*2,300	1,407
" Continent ..	* 500	* 500	498
" U. S.	*2,200	*2,200	3,475

Total from Straits *5,000 *5,000 5,380

Australia nil nil 315

Consumption

London deliveries	1,750	1,523	1,197
Holland deliveries	50	90	119
United States ...	2,578	4,669	3,165

Total 4,378 6,282 4,481

Stocks at close of month

In London—

Straits, Australian	4,183	4,900	3,662
Other kinds	703	915	1,042

In Holland

In United States .. 1,592 1,657 2,850

Total 6,483 7,472 7,560

Afloat—

London	*4,500	3,825	2,532
Banca & Billiton	*2,900	1,870	4,726
United States ...	*5,300	4,860	6,368

Total afloat

close of month . 12,700 10,555 13,626

	Nov. 30, 1917.	Oct. 31, 1917.	Nov. 30, 1916.
Total visible supply	19,183	18,027	21,186

* Estimated.

Straits Tin Prices In New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	50.45	37.74	34.30	41.88	44.19
Feb.	48.73	39.93	37.32	42.63	51.37
Mar.	46.88	38.08	49.93½	50.42	54.36
Apr.	49.12	36.10	47.98	51.75	55.91
May	49.14	33.30	38.78	49.15	63.29½
June	44.93	30.65	40.37	42.17	62.09
July	40.39	31.75	37.50	38.46	62.61
Aug.	41.72	50.59½	43.39	38.54	62.68½
Sept.	42.47	32.79	33.13	38.70½	61.68
Oct.	40.50	30.39½	33.08	41.16	61.85
Nov.	39.81	33.50	39.37½	44.17	74.42½
Dec.	37.64	33.60	38.75	42.66½	
Year	44.32	35.70	38.66	43.48	

AMERICAN IRON AND STEEL INSTITUTE

BULLETIN No. 1

(Issued November 22, 1917.)

TIN, CHLORIDE OF TIN, TIN ORE

Rules and Regulations covering the Importation of
Pig Tin, Chloride of Tin and Tin Ore from
Foreign Countries as approved by the
War Trade Board, November 16, 1917.

COMMITTEE ON STEEL AND STEEL PRODUCTS

E. H. GARY, Chairman

J. A. FARRELL, Vice-Chairman
J. A. BURDEN
H. G. DALTON

E. A. S. CLARKE, Sec'y
A. C. DINKEY
E. G. GRACE

J. A. TOPPING
C. M. SCHWAB
H. H. COOK, Asst. Sec.

Sub-Committee on Pig Tin.

JOHN HUGHES, Chairman, E. R. CRAWFORD, JOHN A. FRY, A. B. HALL,
THEODORE PRATT

OFFICE: 2901, 61 Broadway, New York

PIG TIN

(1) Whenever the word "Tin" occurs in this Bulletin, it is to be construed as including **PIG TIN, CHLORIDE OF TIN AND TIN ORE.**

Whenever the terms "Consumer," "Jobber," "Importer," "Dealer," "Producer" or "Person" occur herein, they are understood to mean:

Consumer. A person who purchases for his own manufacturing requirements and not for resale.

Jobber. A person who purchases Tin from Importers, Dealers or Producers in parcels not less than the minimum wholesale quantity of five gross tons, and resells same to Consumers in small parcels of less than five gross tons.

Importer. A person who imports Tin for his own account, or acting as Agent for a principal and sells same to either Consumers, Dealers, Jobbers or other Importers.

Dealer. A person who buys and sells Tin in wholesale quantities, it being understood that the minimum wholesale quantity is five gross tons in accordance with the established usage of the trade.

Producer. A person producing Tin either by the smelting process from Tin Ores, or by refining processes.

Person. The word "Person" shall also include a partnership and a corporation, unless by the context that meaning is excluded.

(2) The United States Government has requested the American Iron and Steel Institute to act as consignee of importations of Pig Tin, Chloride of Tin and Tin Ore from foreign countries, to be released only to approved recipients under the conditions set forth in the following paragraphs.

(3) The American Iron and Steel Institute is undertaking this work at the request also of consumers, jobbers, importers and dealers, who desire to avoid interruptions of their business, and it will be carried out in accordance with the request above mentioned, subject to and in compliance with certain rules and regulations in respect thereto, now or hereafter promulgated by the War Trade Board, also subject to and in compliance with all the provisions and agreements set forth and contained in Forms 1 to 5, inclusive, hereto annexed and made a part hereof.

(4) The American Iron and Steel Institute agrees:

(a) To receive applications from consumers, jobbers, importers and dealers to be approved by the War Trade Board as recipients of Tin, and to transmit same to the War Trade Board for its decision.

(b) To transmit the approvals, by cable if necessary, to representatives in London, or elsewhere so that they may cooperate with the exporters, if required, in obtaining export licenses from foreign countries, and in making shipments in accordance with necessary regulations.

(c) To supervise importations into the United States and sales therein, through necessary trade channels.

(5) Consumers, jobbers, importers and dealers are required to give through and to the American Iron and Steel Institute certain undertakings, approved both as to form and substance by the War Trade Board, tentative forms of which are annexed hereto. These undertakings are to cover Tin imported from foreign countries and Tin of domestic production.

(6) For the purpose of facilitating this work, the Institute has appointed a Sub-Committee

on Pig Tin, which will act in an advisory capacity and have charge of these matters on behalf of the Institute in the administration of the arrangement made with the United States Government through the War Trade Board. The Sub-Committee on Pig Tin is composed of the following members: JOHN HUGHES, Chairman, E. R. CRAWFORD, JOHN A. FRY, A. B. HALL, THEODORE PRATT.

(7) All consumers, jobbers, importers and dealers or other persons desiring to act in any of the above capacities, are required to fill out and execute an application as provided in Paragraph 4 *sup* (Form No. 3 hereto annexed) and to forward same to the American Iron and Steel Institute, which will immediately submit the names to the War Trade Board for approval. Application blanks will be supplied on request.

(8) Original applications for enrollment on list of approved recipients must be filed with the Sub-Committee on Pig Tin of the American Iron and Steel Institute at its office in New York. Copies of the list of approved names will be filed with representatives of the Institute at San Francisco, at the branch offices of the War Trade Board throughout the United States, and with American Commercial Attaches, Consular Representatives and Diplomatic Officers in foreign countries from which Tin is imported.

(9) All importations of Tin from foreign countries are to be consigned

AMERICAN IRON AND STEEL INSTITUTE

with marginal Bill of Lading clause reading

Notify.....

(Here state name of owner)

Importers should note that in the case of shipments coming forward via Pacific Coast Ports delays in delivery are likely to occur unless two Bills of Lading, one copy Commercial Invoice and one copy Consular Invoice accompany the vessel carrying the shipment. Documents via London are usually not received in New York until several weeks after arrival of the steamer carrying the goods at Pacific Coast port. As a rule, documents covering shipments to Atlantic Coast ports are received in New York in advance of the arrival of the steamer carrying the goods. Proper delivery would be safeguarded by the owner filing a declaration with the Institute, showing particulars of shipments permitted and expected to arrive for their account.

(10) All Bills of Lading together with invoices and other documents should be sent by the foreign shipper through the regular trade or commercial channels to the parties by whom the Tin is purchased or for whose account the Tin is shipped and in no case to the American Iron and Steel Institute.

(11) Upon receipt of documents by the importer or receiver in this country, the Bills of Lading are to be presented to the American Iron and Steel Institute by the importer, accompanied by an undertaking and guarantee, in one of the forms hereto annexed, approved by the War Trade Board, namely

Form No. 1—Importing Consumer's Guarantee.

Form No. 2—Importers' and Consumers' Guarantee combined.

Form No. 3—Importers' and Stock or Jobbers' Guarantee combined.

All applications for the release of importations of Tin under the above mentioned guarantees will be received by the American Iron and Steel Institute at its Office, No. 61 Broadway, New York, N. Y., or at the Office of its representatives in the Rialto Building, San Francisco, and will be passed upon promptly.

(12) Responsible representatives of the Institute have been appointed at New York and San Francisco, clothed with Custom House Power of Attorney for the endorsement of Bills of Lading, as required by the United States Treasury Regulations. These representatives will endorse Bills of Lading covering importations of Tin consigned to the Institute only when the guarantee requirements under Clause 11 have been satisfactorily complied with and the endorsement of such Bills of Lading has been properly authorized.

(13) A record will be kept by the American Iron and Steel Institute of all importations of Tin released to consumers, jobbers, importers and dealers, under the guarantees as indicated above, which will show the particulars of importation, indicating the shipper, the importer, the consumer or jobber to whom the Tin has been released, and any other data necessary to indicate its final disposition and consumption. Furthermore, on parcels of Tin released for jobbing purposes, this branch of the trade will be required to take guarantees from customers, and furnish monthly statement of all sales, to the American Iron and Steel Institute on forms to be provided for that purpose (Form No. 4 hereto annexed) so that the final disposition and consumption of each parcel will be accounted for. Provided, further, that parcels of Tin not to exceed 25 gross tons, may be released to importers or dealers to carry in stock for resale to consumers, in lots of five gross tons, or multiples thereof. Parcels so released to be cleared by Consumers' Guarantee (Form No. 2) which shall be approved by and filed with the American Iron and Steel Institute before delivery.

(14) A record will also be kept of the quantities of Tin released to each consumer, jobber, importer, and dealer, and this record will be kept constantly compared with consumers' and jobber actual requirements as reported to the American Iron and Steel Institute. This record will be checked from time to time by Government inspection of and comparison with Consumers', Jobbers', Importers' and Dealers' books and records.

(15) Reports at regular intervals will be required from consumers, jobbers, importers, dealers and producers, showing stocks on hand at a given date, actual consumption, and other particulars. A compilation of these reports will be made by the American Iron and Steel Institute for the information of the War Trade Board. With this information as a basis, modifications or changes may be made from time to time in the regulations and practice controlling the importation, allotment and distribution of supplies of Tin, so that the best interests of consumers, jobbers, importers, dealers, producers and of the public, may be properly served.

(16) The American Iron and Steel Institute will cooperate to the fullest extent with the War Trade Board in an endeavor to secure permits for individual consumers, jobbers, importers and dealers, allowing the importation of Tin in quantities sufficient to furnish their reasonable requirements. The Institute will also use its best efforts to provide for a distribution of imports upon an equitable basis, under such regulations as may be promulgated by the War Trade Board from time to time.

Forms Annexed.

No. 1—Importing Consumer's Guarantee.

No. 2—Importers' and Consumer's Guarantee combined.

No. 3—Importers' and Stock or Jobbers' Guarantee combined.

No. 4—Jobber's Monthly Statement of Sales.

No. 5—Application for approval as recipient of Tin.

IMPORTING CONSUMER'S TIN GUARANTEE

To AMERICAN IRON AND STEEL INSTITUTE,
New York, N. Y.
Ex S SArrived.....(Here state place and date of arrival.)
Merchandise.....(Here state whether Pig Tin, Chloride of Tin or Tin Ore.)
Marks Number of Weight Kind of Tin
 Packages
.....
In consideration of your consenting to the delivery to me of the tin, chloride of tin, tin ore,
specified above, I hereby give you the following undertaking.
I will not sell the tin, chloride of tin, tin ore, now delivered by you to any dealer or other
person or persons in the United States, but will use it for my own manufacturing purposes.
I will at any time produce for inspection by any authorized officer or officers of the
United States Government all books, records and documents of every kind, relating in any way
to any and every transaction in pig tin, chloride of tin and tin ore, with which I have been
in anywise connected.
(The Buyer signs here).
Date.....

IMPORTER'S TIN GUARANTEE

To AMERICAN IRON AND STEEL INSTITUTE,
New York, N. Y.
Ex S SArrived.....(Here insert place and date of arrival.)
Merchandise.....(Here state whether Pig Tin, Chloride of Tin or Tin Ore.)
Marks Number of Weight Kind of Tin
 Packages
.....
I have sold the tin, chloride of tin, tin ore specified above to
whose guarantee you will find on the back hereof. I will produce to you at any time on demand
the original contracts or other documents evidencing the sale.
I will at any time produce for inspection by any authorized officer or officers of the
United States Government all books, records and documents of every kind relating in any way
to any and every transaction in pig tin, chloride of tin, and tin ore, with which I have been
in anywise connected.
(The Seller signs here).
Date.....

CONSUMER'S TIN GUARANTEE

To AMERICAN IRON AND STEEL INSTITUTE,
New York, N. Y.
In consideration of your consenting to the delivery to me of the tin, chloride of tin, tin
ore, specified on Page 1, I hereby give you the following undertaking:
I will not sell the tin, chloride of tin, tin ore, now delivered by you to any dealer or
other person or persons in the United States, but will use it for my own manufacturing purposes.
I will at any time produce for inspection by any authorized officer or officers of the
United States Government all books, records and documents of every kind relating in any way to
any and every transaction in pig tin, chloride of tin and tin ore, with which I have been in
anywise connected.
(The Buyer signs here).
Date.....

IMPORTER'S TIN GUARANTEE

To AMERICAN IRON AND STEEL INSTITUTE,
New York, N. Y.
Ex S SArrived (Here state place and date of arrival.)
Merchandise.....(Here state whether Pig Tin, Chloride of Tin or Tin Ore.)
Marks Number of Weight Kind of Tin
 Packages
.....
I have sold the tin, chloride of tin, tin ore, specified above to
whose guarantee you will find on the back hereof. I will produce to you at any time on de
mand the original contracts or other documents evidencing the sale.
I will at any time produce for inspection by any authorized officer or officers of the
United States Government all books, records and documents of every kind relating in any way
to any and every transaction in pig tin, chloride of tin and tin ore, with which I have
been in anywise connected.
(The Seller signs here).
Date.....

STOCK AND OR JOBBER'S TIN GUARANTEE

TO AMERICAN IRON AND STEEL INSTITUTE,
New York, N. Y.

In consideration of your consenting to the delivery to me of the tin chloride of tin, tin
us
as specified on Page 1, which I have purchased from
we

..... (Here state name of Seller.)
I hereby give you the following undertaking:

We
I am not buying this tin for speculative purposes nor for resale to other jobbers.
We are
I will not sell any tin, chloride of tin, or tin ore to any person or persons in the United
We
States without satisfying myself that it is intended to be used exclusively for industrial
ourselves
purposes in the United States, and that it will not be exported.

I will furnish a statement on Form 4 of all jobbing sales of the within described tin made
We
by me and will not make any sale without delivering to the purchaser an invoice stamped with
us
the clause provided in Form 4.

I will furnish Consumers' Guarantee (Form 2) covering each sale of five tons, or multiple
We
thereof, to be approved by and filed with the American Iron and Steel Institute before delivery.

I will at any time produce for inspection by any authorized officer or officers of the
We
United States Government all books, records and documents of every kind relating in any way
to any and every transaction in pig tin, chloride of tin and tin ore, with which we have been in
or
anywise connected.

The Buyer signs here:

Date:

JOBBER'S MONTHLY STATEMENT OF SALES

TO AMERICAN IRON AND STEEL INSTITUTE,
New York, N. Y.

The jobbing sales enumerated below for the month of 191 . have been
made subject to the guarantee stamped on our invoice as follows:

"This tin has been received by us under our signed agreement to observe the
restrictions of the Tin Guarantee, and is subject to your agreement to abide by said
restrictions, to wit: That it shall be used exclusively for industrial purposes in the
United States of America and shall not be exported or sold or otherwise disposed of for
export."

STATEMENT

Date of Sale	Vessel	Marks	Quantity Sold		Name and Address of Purchaser
			Slabs	Pounds	

I have satisfied myself that the above tin is intended to be used exclusively for industrial
We
purposes in the United States, and will not be exported.

(Signature)

Date:

APPLICATION FOR APPROVAL AS RECIPIENT OF PIG TIN, CHLORIDE OF TIN AND TIN ORE, UNDER REGULATIONS APPROVED BY THE WAR TRADE BOARD

AMERICAN IRON AND STEEL INSTITUTE,
New York, N. Y.

Date:

GENTLEMEN:

Receipt is acknowledged of your Bulletin No. 1 and I request that my name be approved
we
as recipient of Tin, in accordance with the conditions and agreements set forth in said Bulletin,
our
under the following classes:

.....
(Here state whether Consumer, Jobber, Importer, Dealer or Producer; Applicant may request to
be listed in one or more classes.)

Whereas the American Iron and Steel Institute is undertaking the work defined in said
Bulletin, voluntarily and without compensation, now, therefore, in consideration of the performance
of the services therein described, I for myself and the ultimate recipient of any pig tin,
we
ourselves

agree that the tin or tin ore shall not be consigned to the American Iron and Steel Institute,
directly for the reason as follows:

(1) Neither the American Iron and Steel Institute, nor any officer, member or committee
thereof, shall be in any way liable for the withdrawal at any time of any facilities for importing
pig tin, chloride of tin, or tin ore, or for any action on its part in connection with any
of the duties mentioned in it.

(2) In the event of any dispute arising in connection with any particular shipment or ship-
ments of tin in which I may be interested as a consumer, jobber, importer, dealer, producer,
we

or otherwise, and where it is not possible, in the opinion of the American Iron and Steel
Institute, to refuse or withdraw delivery of said tin, the American Iron and Steel Institute may
refuse or withhold delivery of said tin, and the case may be presented for final decision to the

War Trade Board, whose instructions in the premises the American Iron and Steel Institute may carry out without incurring any liability whatsoever.

- (3) I will conform to the requirements, regulations and provisions set forth in your Bulletin No. 1 and any changes or amendments which may be made to such regulations hereafter.
- (4) I will give the required guarantees on all importations or purchases of tin made by me.
- (5) I will furnish statements as required of all sales made by me and take guarantees as required from my customers.
- (6) I will make the required statistical reports from time to time when called upon to do so.
- (7) I will indemnify and hold harmless the American Iron and Steel Institute and/or its officers, individually and or collectively, and the Sub-Committee on Pig Tin, individually and or collectively, from all liability in connection with any importations or dealings in pig tin, chloride of tin, or tin ore entered into by me.

(Signature of applicant.)

Witness.....

Spelter in November.

Continued Unsatisfactory Conditions in Spelter — Trade Awaiting Government Action as to Price Fixing — Further Curtailment in Production — Month Closes Very Quiet With a Fractional Advance in Prices — Slight Decline in Ore Prices.

Conditions in the spelter industry during November were much the same as those noted for October. The demand for metal was far below normal; with large consuming interests reserved, galvanizers' requirements exceedingly small, and with brass interests apparently well supplied with metal. Steps toward Government regulation of zinc were progressing slowly, as in the case of other metals. Various meetings of importance between the War Industries Board, on the one hand, and the Zinc Committee of prominent producers, representing the spelter industry — which had been appointed to confer with the Government representatives — on the other, were reported as taking place from time to time, but no definite information as to the results achieved at these conferences, has as yet been given to the trade.

A natural movement to adjust the unfavorable conditions existing in the trade and which had been brought about by over-production during 1917, was progressing favorably and was noted in the further curtailment of output, while at the same time, efforts to extend and to expand the use of spelter in other directions was being made. On November 1st., another smelting

plant, with producing capacity of 750 tons per month, was closed and on November 20th, the largest smelting plant in the country reduced operations to one-third of its capacity. It is estimated that 20,000 retorts have gone out since the United States Geological Survey reported that 64,626 were idle, on September 30th; which means that about 85,000 are now closed while 145,000 are still operating. As an example of expansion in the use of spelter, a ten-mill plant for the manufacture of zinc sheets is reported as going to be built immediately at Greencastle, Indiana, by a million dollar company, recently organized.

The galvanizing trade has fallen off to less than one half its former extent, only about 30% to 35% on an average basis, being now at work. The brass trade, compared with one year ago, is operating at about 50% of capacity. The latter interests, however, are alert and expecting new war contracts to more than fully restore the industry in the near future.

Prices of prime Western spelter for prompt and early deliveries fluctuated within narrow limits from 7.80c New York, 7.62½c E. St. Louis, at the beginning of the month, to the lowest

point, 7.67½c New York, 7.50c E. St. Louis, on the fifth. On the 13th, not only had the lost fraction been recovered but a further advance was made to the highest point of the month, 7.97½ to 8.17½c New York, 7.75 to 8.00c E. St. Louis. These prices were maintained until the 19th, when the outside limit was reduced fractionally to 8.05c New York, 7.87½c St. Louis. By the 26th, a further recession to 7.87½ to 7.97½c New York, 7.70 to 7.80c St. Louis, was noted and by the closing day the outside limit on these figures was 7.92½c New York and 7.75c St. Louis which indicated but a slight advance for the month from 7.80c New York. Future positions were maintained throughout the month at about ⅞c over the prompt and early shipments. Intermediate grade at the close was firmly held with offerings being made at 9.75c which were refused. High grade was unchanged at 13.50c and brass special nominal at 8.00 to 8.50c.

Total exports of spelter during the first nine months of the year were 154,653 tons; 47,330 tons being smelted from foreign ores and 107,323 tons from domestic ores. The price of ores during November declined slightly, \$2.50 per ton to \$72.50, the maximum limit reported from Joplin. The foreign market price was still held at £54 per ton.

The month opened with conditions and prices of spelter unchanged from the October closing but it weakened under the dulness that was experienced in the first week. The placing of large contracts for shells by the Government aroused the trade and awakened interest as it was supposed that large quantities of spelter would be required in their manufacture. Prices were stim-

ulated and recovered the decline that had occurred and some activity developed with a fair volume of business transacted in the next several days. As time passed, however, and no Government buying was reported interest again weakened and dulness followed with receding prices.

At the close of the month, business was at a standstill, pending Government action, which the general impression in the trade seemed to indicate, would be announced within another week and that the result of the regulation of prices would be maximum rates established on all grades.

Spelter Prices in November.

Day.	New York.	St Louis.	London.		
	Cents.	Cents.	£	s	d
1	7.80	7.62½	54	0	0
2	7.73¾	7.56¼	54	0	0
3	7.67½	7.50	54	0	0
4	7.67½	7.50	54	0	0
5	7.67½	7.50	54	0	0
6	7.73¾	7.56¼	54	0	0
7	7.92½	7.75	54	0	0
8	8.05	7.87½	54	0	0
9	8.05	7.87½	54	0	0
10	8.05	7.87½	54	0	0
11	8.05	7.87½	54	0	0
12	8.05	7.87½	54	0	0
13	7.98¾	7.81¼	54	0	0
14	7.98¾	7.81¼	54	0	0
15	7.98¾	7.81¼	54	0	0
16	7.98¾	7.81¼	54	0	0
17	7.92½	7.75	54	0	0
18	7.92½	7.75	54	0	0
19	7.92½	7.75	54	0	0
20	7.92½	7.75	54	0	0
21	7.92½	7.75	54	0	0
22	7.92½	7.75	54	0	0
23	7.92½	7.75	54	0	0
24	7.92½	7.75	54	0	0
25	7.92½	7.75	54	0	0
26	7.92½	7.75	54	0	0
27	7.92½	7.75	54	0	0
28	7.92½	7.75	54	0	0
29	7.92½	7.75	54	0	0
30	7.92½	7.75	54	0	0
High	\$ 17½	8.00	54	0	0
Low	7.67½	7.50	54	0	0
Average	7.9031	7.7281	54	0	0

Spelter Prices in St. Louis.

Extreme price fluctuations of Prime Western Spelter, East St. Louis delivery, by months and years.

	—1914—			—1915—			—1916—			—1917—		
	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.
Jan.	5.25	5.10	5.14	7.62½	5.55	6.33	19.25	17.12½	18.01	10.87½	9.00	9.82
Feb.	5.35	5.20	5.27	10.00	7.65	8.62	21.00	18.50	19.92	10.75	9.37½	10.32
Mar.	5.22½	5.12½	5.15	11.00	8.87½	9.80	20.62½	16.25	17.91½	10.87½	10.37½	10.65
April	5.12½	4.85	5.03	14.00	9.25	11.22	19.25	17.50	18.44	10.50	8.75	9.55
May	5.00	4.90	4.96	21.00	13.00	15.52½	17.75	13.12½	15.75½	9.50	9.12½	9.30½
June	4.97½	4.82½	4.93	27.00	17.50	22.14	13.87½	10.87½	12.62	9.50	9.00	9.28
July	4.95	4.80	4.84	22.75	17.75	20.53	9.75	8.20	8.92	9.00	8.25	8.64
Aug.	6.00	4.70	5.45	18.00	10.75	14.19	11.00	8.62½	9.52½	8.62½	7.75	8.30
Sept.	5.85	4.95	5.33	15.25	13.37½	14.10½	9.62½	8.50	9.06	8.25	7.87½	8.09
Oct.	5.00	4.60	4.81	14.62½	13.25	13.89	10.37½	9.25	9.83	8.20	7.62½	7.95
Nov.	5.20	4.80	4.97	19.00	14.37½	16.87½	13.12½	10.25	11.75	8.00	7.50	7.73
Dec.	5.65	5.20	5.49	18.00	14.75	16.72	13.12½	9.62½	11.11			
Year	6.00	4.60	5.11½	27.00	5.55	14.16	21.00	8.30	13.57	*10.87½	*7.50	*9.06

* 12 months.

Spelter Prices in New York.

	1913.	1914.	1915.	1916.	1917.
Jan.	7.25	5.35	6.52	18.18½	9.97
Feb.	6.49	5.46	8.86½	20.09	10.49
Mar.	6.24	5.35	10.12½	18.10	10.82½
April	5.79	5.22	11.51	18.61½	9.73
May	5.51	5.16	15.82½	15.93	9.48
June	5.23½	5.12	22.62½	12.80	9.45
July	5.41	5.03	20.80	9.70	8.82
Aug.	5.80	5.63	14.45	9.10	8.48
Sept.	5.85	5.52	14.49	9.23½	8.26½
Oct.	5.47	4.99½	14.07	10.01	8.13
Nov.	5.64	5.15	17.04	11.92½	7.90
Dec.	5.22	5.67	16.91	11.28½	
Av.	5.80	5.30	14.44	13.75	

Waterbury Spelter Averages.

	1913.	1914.	1915.	1916.	1917.
Jan.	7.56	5.54	6.55	22.25	13.05
Feb.	6.81	5.70	11.85	22.70	13.80
Mar.	6.56	5.59	12.15	23.15	13.45
April	6.08	5.50	13.85	23.20	11.85
May	5.77	5.38	20.55	21.20	11.05
June	5.50	5.37	25.60	17.40	10.85
July	5.61	5.26	24.90	15.20	10.55
Aug.	5.99	5.66	19.30	13.60	10.05
Sept.	6.13	5.91	17.85	13.70	9.80
Oct.	5.74	5.23	16.85	12.95	9.75
Nov.	5.60	5.38	19.36	14.10	9.65
Dec.	5.44	5.90	21.15	13.20	
Av'ge.	6.06½	5.53½	17.50	17.72	

Sheet Zinc Price Changes.

The following table gives the changes in the base price of sheet zinc since June 27, 1916, together with the price of spelter ruling on the same day.

1916—	Sheet Zinc	Spelter St. Louis.
June 27	18.00	11.37½
July 9	15.00	9.37½
July 11	15.00	9.62½
October 26	16.00	10.12½
November 10	17.00	11.12½
November 17	18.00	12.00
November 20	19.00	12.12½
November 24	20.00	12.87½
November 24	21.00	12.87½
April 25	20.00	8.97½
April 26	19.00	9.00

Exports of Domestic Spelter and Sheets--Short Tons.

	—1916—		—1917—	
	Tons.	Value.	Tons.	Value.
Jan.	10,483	\$3,601,970	15,351	\$4,455,110
Feb.	10,328	3,638,003	15,551	3,933,047
Mar.	8,171	2,902,472	17,408	4,977,420
April	9,133	3,461,914	12,675	3,327,809
May	8,583	3,093,620	19,528	4,758,793
June	11,309	4,036,656	13,095	3,280,111
July	12,708	4,230,805	8,863	2,219,420
Aug.	18,661	5,549,581	11,283	2,871,208
Sept.	19,255	5,150,808		
Oct.	19,994	5,758,357		
Nov.	18,991	5,291,493		
Dec.	15,652	4,774,158		
Total	193,268	\$51,480,887		

Lead in November.

November a Satisfactory Month in the Lead Market — Market Firm With Outside Price Up $\frac{3}{8}$ c Per Pound, Trust Price Advanced $\frac{3}{4}$ c Per Pound — Ore Market Up \$15 Per Ton — Government October Requirements Covered at 6.65c Per Pound.

Conditions in the lead market during November were satisfactory to the trade. Strength and activity were especially notable during the first fortnight when negotiations for November and December Government requirements were understood to be under way between producers and the War Industries Board. Later, it was announced that October requirements had been purchased at 6.65c per pound; November needs were arranged for partly at a fixed price that was not mentioned, and partly on an average basis while December requirements were still awaiting definite settlement.

Two advances in quick succession, $\frac{1}{8}$ c per pound on November 5th, and $\frac{1}{4}$ c per pound on November 7th., were announced by the American Smelting & Refining Co., carrying their official base price to 6.25c New York, 6.17 $\frac{1}{2}$ c E. St. Louis basis, with these figures still in force at the close of the month.

Prices in the outside market, after advancing $\frac{1}{4}$ c per pound November 1st to 6.25c New York, 6.00 to 6.25c St. Louis, declined a fraction to 6.12 $\frac{1}{2}$ c New York on the 5th, but recovered the following day and continued to rise, thereafter, until the 13th, when the highest limits, 6.37 $\frac{1}{2}$ to 6.62 $\frac{1}{2}$ c New York, 6.25 to 6.37 $\frac{1}{2}$ c St. Louis were reached, after which no change was noted. The advance for the month was $\frac{3}{8}$ c per pound.

Lead ore advanced twice during the month, a total of \$15 per ton from \$60 to \$75 by the 19th, after which there was no change. Production of lead was reported to be about 50,000 tons per month. Exports for the first nine months were 34,487 tons and imports for the same period were 47,101 tons. The Lead Committee which was appointed early in the Summer to arrange for Government requirements was dissolved on October 31st, the same as the other sub-committees on metals the provisions of the Lever

bill making it impossible for them to continue to act.

Market Opens Strong.

The month opened with a strong and advancing market with prices $\frac{1}{4}$ c per pound higher than the October closing. Government negotiations were in progress to provide for requirements to cover the last two months of the year; consequently, producers were not in the market as sellers but business continued among dealers and consumers and to this activity was attributed the rise in prices. The advance in the official base price of the "Trust" was accepted as an indication that transactions with the Government had been concluded.

Independent producers continued to ask premiums of $\frac{1}{8}$ to $\frac{1}{4}$ c per pound.

Lead Prices in November.

Day.	New York*	St. Louis.	London.
	Cents.	Cents.	£ s d
1	6.25	6.12 $\frac{1}{2}$	30 10 0
2	6.37 $\frac{1}{2}$	6.18 $\frac{1}{4}$	30 10 0
3	6.25	6.06 $\frac{1}{4}$	30 10 0
4	6.37 $\frac{1}{2}$	6.25	30 10 0
5	6.37 $\frac{1}{2}$	6.31 $\frac{1}{4}$	30 10 0
6	6.37 $\frac{1}{2}$	6.31 $\frac{1}{4}$	30 10 0
7	6.37 $\frac{1}{2}$	6.31 $\frac{1}{4}$	30 10 0
8	6.37 $\frac{1}{2}$	6.31 $\frac{1}{4}$	30 10 0
9	6.37 $\frac{1}{2}$	6.31 $\frac{1}{4}$	30 10 0
10	6.37 $\frac{1}{2}$	6.31 $\frac{1}{4}$	30 10 0
11	6.50	6.31 $\frac{1}{4}$	30 10 0
12	6.50	6.31 $\frac{1}{4}$	30 10 0
13	6.50	6.31 $\frac{1}{4}$	30 10 0
14	6.50	6.31 $\frac{1}{4}$	30 10 0
15	6.50	6.31 $\frac{1}{4}$	30 10 0
16	6.50	6.31 $\frac{1}{4}$	30 10 0
17	6.50	6.31 $\frac{1}{4}$	30 10 0
18	6.50	6.31 $\frac{1}{4}$	30 10 0
19	6.50	6.31 $\frac{1}{4}$	30 10 0
20	6.50	6.31 $\frac{1}{4}$	30 10 0
21	6.50	6.31 $\frac{1}{4}$	30 10 0
22	6.50	6.31 $\frac{1}{4}$	30 10 0
23	6.50	6.31 $\frac{1}{4}$	30 10 0
24	6.50	6.31 $\frac{1}{4}$	30 10 0
25	6.50	6.31 $\frac{1}{4}$	30 10 0
26	6.50	6.31 $\frac{1}{4}$	30 10 0
27	6.50	6.31 $\frac{1}{4}$	30 10 0
28	6.50	6.31 $\frac{1}{4}$	30 10 0
29	6.50	6.31 $\frac{1}{4}$	30 10 0
30	6.50	6.31 $\frac{1}{4}$	30 10 0
High	6.62 $\frac{1}{2}$	6.37 $\frac{1}{2}$	30 10 0
Low	6.12 $\frac{1}{2}$	6.00	30 10 0
Average	6.4437	6.2812	30 10 0

* Outside market.

Lead Prices in St. Louis.

Extreme fluctuations of Soft Missouri Lead in St. Louis.

1914			1915			1916			1917		
High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.	High.	Low.	Av.
Jan. 4.10	3.95	3.99½	3.65	3.50	3.57	6.00	5.45	5.80	8.25	7.30	7.58
Feb. 4.10	3.85	3.95	3.80	3.62½	3.72	6.37½	6.00	6.17	10.00	8.00	9.04
Mar. 3.87½	3.65	3.83½	4.12½	3.82½	3.98	8.25	6.40	7.46	10.00	9.25	9.53
April 3.80	3.65	3.70	4.15	4.07½	4.11	8.12½	7.32½	7.67	9.75	9.00	9.26
May 3.82½	3.77½	3.81	4.45	4.10	4.16	7.45	7.10	7.28	11.50	9.75	10.52
June 3.82½	3.77½	3.80	5.50	4.80	5.76	7.20	6.62½	6.77	12.00	11.00	11.71
July 3.77½	3.72½	3.75	7.67½	5.30	5.52	6.67½	6.00	6.20	11.37½	9.75	10.56
Aug. 3.75	3.70	3.73½	5.20	4.30	4.59	6.75	5.75	6.19	10.87½	10.25	10.59
Sept. 3.75	3.55	3.67	4.82½	4.35	4.53	6.95	6.50	6.71	10.25	7.92½	8.82
Oct. 3.55	3.35	3.39½	4.82½	4.40	4.51½	6.90	6.85	6.87½	7.92½	5.42½	6.75
Nov. 3.82½	3.37½	3.58	5.22½	4.82½	5.08	7.25	6.85	7.00	6.77	6.90	6.28
Dec. 3.70	3.60	3.67	5.42½	5.10	5.26½	8.00	7.20	7.53			
Year 4.10	3.35	3.74	7.50	3.50	4.57	8.25	5.45	7.80	12.00	5.42	9.16

* Eleven months.

Aluminum, Silver, and Antimony
Prices in November.

New York			
Day.	Aluminum. Cents.	Silver. Cents.	Antimony. Cents.
1	37.00	89½	14.00
2	36.00	88½	14.00
3		88½	
5	36.00	87½	14.00
7	36.00	86½	14.00
8	37.00	86½	13.87½
9	37.00	86½	13.87½
10		86½	
12	37.00	86½	13.75
13	37.00	86	13.75
14	37.00	86	13.75
15	37.00	85½	13.75
16	37.00	85½	13.75
17		85½	
19	37.00	85½	13.75
20	37.00	85½	13.75
21	37.00	85½	13.75
22	37.00	84½	13.75
23	37.00	84½	13.87½
24		84½	
26	37.00	84½	14.12½
27	37.00	84½	14.12½
28	37.00	84½	14.12½
29			
30	37.00	84½	14.25
High	38.00	89½	14.37½
Low	35.00	84½	13.62½
Average	36.85	85.89	13.90

Imports of Aluminum.

(In tons of 2,000 lbs.)

	1913.	1914.	1915.	1916.	1917.
Jan.	1,590	616	636	425	1
Feb.	996	635	291	324	14
Mar.	1,007	741	383	223	2
April	1,773	678	153	406	3
May	1,169	586	209	696	none
June	880	548	893	325	6
July	1,216	709	356	208	1
Aug.	668	736	245	106	0
Sept.	529	636	521	12	
Oct.	560	1,283	93	247	
Nov.	528	406	61	348	
Dec.	677	516	426	4	
Total	11,593	8,090	4,267	3,324	27

Exports of Domestic Lead.

(In tons of 2,000 pounds.)

	1916	1917
Jan.	7,192	8,790,447
Feb.	10,246	1,392,624
Mar.	5,585	1,068,459
April	5,870	857,095
May	7,558	1,027,273
June	7,167	1,062,616
July	9,008	1,276,316
Aug.	7,542	995,724
Sept.	15,633	2,012,413
Oct.	9,396	1,303,934
Nov.	6,402	887,429
Dec.	5,866	933,873
Total	100,465	13,508,203

over the "Trust" basis but business gradually became less active as the days passed, while prices remained firm. Some scarcity of metal was reported in the second fortnight just after prices had reached the highest point, 6.37½ to 6.62½¢. New York. Premi-

ums on future deliveries were being asked in the latter part of the month and producers who had disposed of a goodly portion of their entire output for the remainder of the year were not eager sellers. The market at the close was very quiet but steady.

November Review of Joplin Ore Market.

The month of November just closed showed a gradually descending ore market throughout the month. The first week showed an average of \$54, while the last week showed an average of \$57 for zinc blende ores. This alone is a decrease of \$7 per ton in the average price from the beginning to the ending of the month, and this in reality does not show the real decrease in the market, because the average price was held up by reason of the fact that only a few tons of ore weekly brought the high base price. There was a steadier market for calamine ores, and there was not the fluctuation noted in the average prices. The average price for the entire month for all grades of calamine was approximately \$35.00.

The situation in zinc ores has been unhealthy for many months and the back of the market was broken this past month when failing to secure any Government assistance and with a further decrease of support by the smelters the market was simply allowed to "cave in". Publication of Government statistics upon the stock of spelter, together with the known heavy stocks of ore, made it apparent that it is impossible to anticipate any further support of the local zinc ore market by the smelters themselves. Instead of supporting it, they have withdrawn from the market and a large number of them have closed down a very large part of their capacity, especially in the Oklahoma and Kansas field. Similarly the ore producers are closing down their plants, and the tonnage cut off, especially in those camps which have high production costs, has already reached a very large figure.

Another feature which is discouraging production and which has inter-

fered both with production and shipments has been the lack of cars for shipment. This has, in a measure, also been responsible for the increase of the surplus stocks of the district, because even though the ores are sold, they cannot be moved and ore producers have been compelled to build new bins in which to store their ores. Smelters for a considerable period advanced money upon the stored ores in the hope of securing early shipment and to help the operators bridge over their needs for operating account, but the burden became too great to bear and this seems now to threaten the closing down of many mills which even with the market conditions as they are can still operate profitably.

The shipments for the month aggregated 26,443 tons of blende, an average of 6,610 tons weekly. Blende ores aggregated 2,092 tons, an average of 523 tons per week. This made a total of a little over 7,100 tons of zinc ores weekly. It is believed that the total output per week has been brought down to about 8,500 tons, or perhaps a little lower under the strain of conditions above enumerated.

It is apparent, therefore, that the actual surplus stocks held in the field, has therefore not grown to the extent they otherwise would have under normal conditions, increasing but 925 tons during the month. When the month closed, the stocks of zinc ores had reached 33,850 tons. This is contrasted with 6,970 tons for same period of 1916.

The lead ore market showed a radical different tendency from that displayed by zinc. The market opened extremely weak, but by the end of the month was strong at \$75. The average for the

first week of the month was \$64 per ton, but it has averaged practically \$75 the latter half of the month. Shipments were also better in proportion than zinc, the average being over 1,000 per week.

The closing of the 11th month of the year gives a fairly comprehensive idea of what the total output of the district will be and the general standing of the industry for the year. Blende has increased during 11 months over the same period of 1916, 84,083 tons, while calamine has increased 17,423 tons, making a grand total increase of over 100,000 tons of zinc ore during the year. The increase in blende amounts to 33 $\frac{1}{3}$ % and the increase in calamine tonnage is equivalent to 70%. This increase in tonnage in the face of conditions during the past year is one of the most remarkable showings in the history of the district. Lead shows an increase of 11,834 over the same period of 1916, equivalent to 25% in-

crease over the previous year. When we turn to the difference in the average prices, however, one begins to see how wonderful the increase in production is, in view of the prices paid. The average price for 1917 for blende ores is \$9.18 per ton less than in 1916. The price of calamine is \$27.30 less per ton than in 1916, and yet both blende and calamine showed larger increases than lead, the average price of which was \$19.11 greater in 1917 than in 1916.

The net increase in valuation for zinc ores for 11 months was \$2,723,783, while the net increase in lead value was \$2,093,105 or a grand total gain of \$4,816,888. All of these figures are based upon the shipments alone and to both this tonnage and value must be added the surplus stocks which would amount to 26,000 tons more of blende and 8,400 tons of lead ore, which would bring the grand total valuation over six million dollars greater than 1916.

Aluminum in November

**Business at Standstill Pending Government Regulation and Price-Fixing
—Market Generally Inactive Throughout the Month.**

Government regulation and price-fixing in the aluminum industry is expected in the early future and as has been the case in other metals, business is at a standstill pending its accomplishment.

The aluminum market throughout November was generally inactive, although some export business was transacted at intervals. Such contracts, in fact, were the mainstay of the market, the first order being for prompt shipment, New York, for export to Italy, placed early in the month at 35.50c for No. 1 Virgin 98-99%. Other sales for export were reported at 37.00c for the same variety of metal around

the middle of the month. There was a dearth of domestic business but after the decline of 1c per pound on all kinds of metal—which established a new low record for 1917—from the October closing prices, 36.00c to 38.00c for No. 1 Virgin 98-99%; 34.00c to 36.00c for pure 98-99% remelted and 26.00c to 28.00c for No. 12 alloy remelted on November 2nd, and which was promptly recovered the following day, prices were firmly maintained at the figures with which the month began—the same as the October closing just given.

Imports of aluminum in 1917 to August 31st inclusive, were the smallest since 1913—only 27 tons of 2,000 pounds each, having been received.

Antimony in November.

War Trade Board Announcement Regarding Importation Licenses Creates Great Interest—Prices Steady; October Closing at 14.00c—Falling Off in Shrapnel Shell Orders is Cause of Smaller Demand.

The most important development in the antimony trade in November, was the announcement of the War Trade Board, on the last day of the month, regarding licenses to be issued by the Government for various importations and among which antimony was listed. The licenses apply not only to the importation of refined metal but to ore and to any chemical extracted therefrom. The trade, of course, is most interested in the details of the regulations dealing with the restrictions regarding importations, which will soon be known. The first effect of this new development upon the trade, was to restrict offerings. Several sellers immediately withdrew quotations.

Prices during the month were steady in the early days, at the October closing, 14.00c, but with the cessation of even the small jobbing business that had previously sustained prices, a recession began which carried the market to the lowest point, 13.62½c by the 12th. This price was stationary until November 23rd, when a gradual rise began, with the placing of small orders, which by the 26th had recovered the decline. On the last day, a further rise to 14.12½c to 14.37½c was announced, making the net advance, for the month 1½c per pound, while the total rise, from the lowest point to the highest, was 7½c per pound.

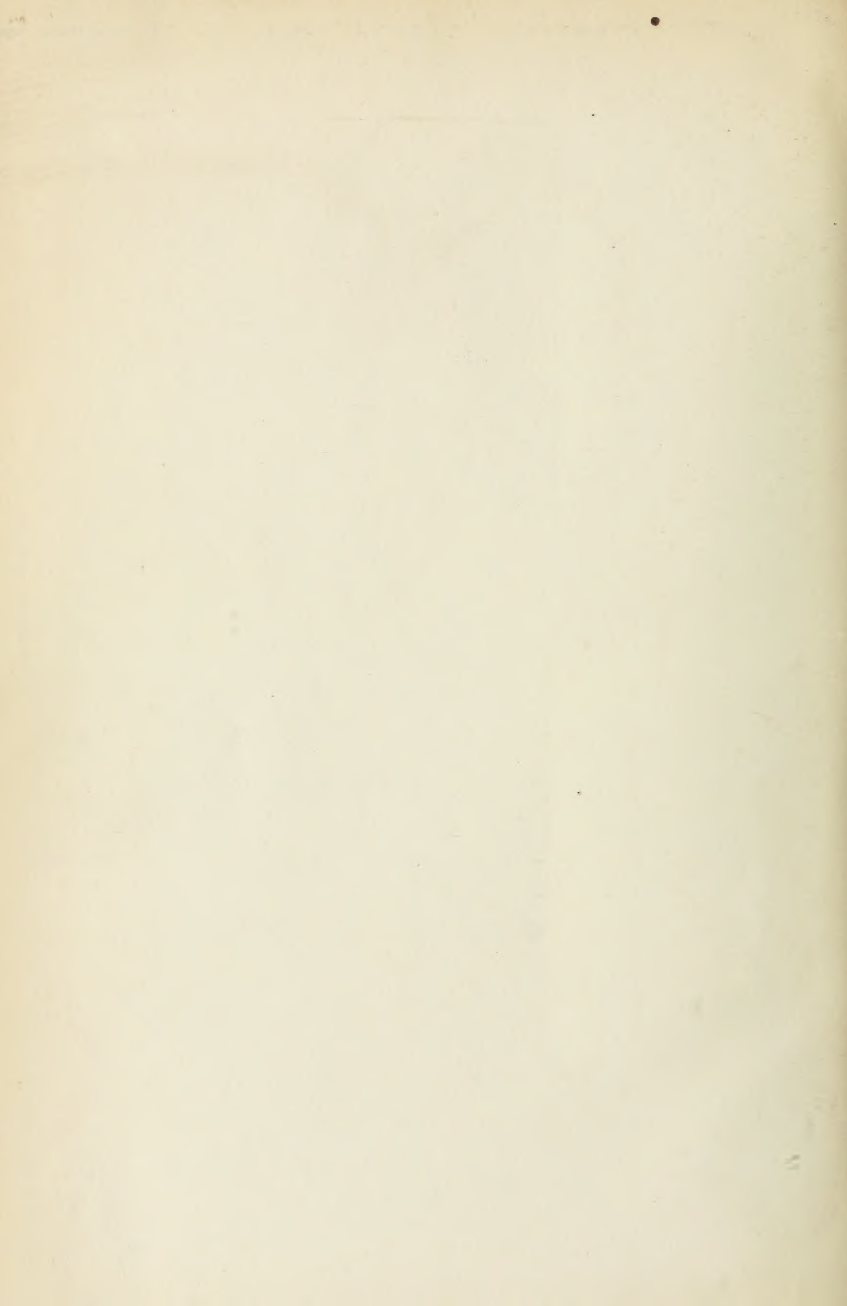
Stocks of antimony in New York, were known to be larger than in former years and were probably accumulated in anticipation of heavy Government buying for war munitions, concerning which many rumors have floated about from time to time, temporarily influencing the market, but which at the close of the month—as in former instances—had not yet materialized into actual buying. The story of the \$4,000,000 contract, published on the 15th of November, said to have been placed with the Magnolia Metal Company, was one of this type and was promptly and publicly con-

tradicted by the president of the Magnolia interests.

The falling off in shrapnel shell orders because of the more extensive use of high explosive shells is considered to be one of the important causes for the smaller demand for antimony as compared with that in 1916 but another reason, equally potent and important, is undoubtedly to be found in the excessive importations made this year and which have piled up stocks of antimony in New York: 800 tons more were imported during the first eight months of 1917 than were imported during the entire 12 months of 1916.

After the utter stagnation which had pervaded the trade all through October, it was at least refreshing, to find a better tone developing at the beginning of November with prices holding steady under the few jobbing sales that were being made at 14.00c for prompt and at 14.00c to 14.25c for November delivery. The better tone was not of long duration, however, and the small buying ceased altogether. There was a sale made at the New York Metal Exchange "under the rule" of 25 tons of Chinese antimony 99% pure, at 13.37½c per pound, duty paid, on the 12th, which had been ordered to be sold to the highest bidder to close out a delinquent contract. During the following ten days conditions were unchanged but shortly afterward a few orders were placed, among which were one or two for 25 tons, and prices at once advanced 1½c per pound.

Importers continued to claim in November, that business was impossible for them, with prices 1c per pound below cost of importation, but their contracts expire soon and a heavy falling off in shipments from China and Japan is predicted. Importers' prices were 13.50c c.i.f. New York, in bond. At the close, was the most important development of the month—the license on importations of antimony—and prices rose to the maximum, 14.37½c, the outside limit.



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